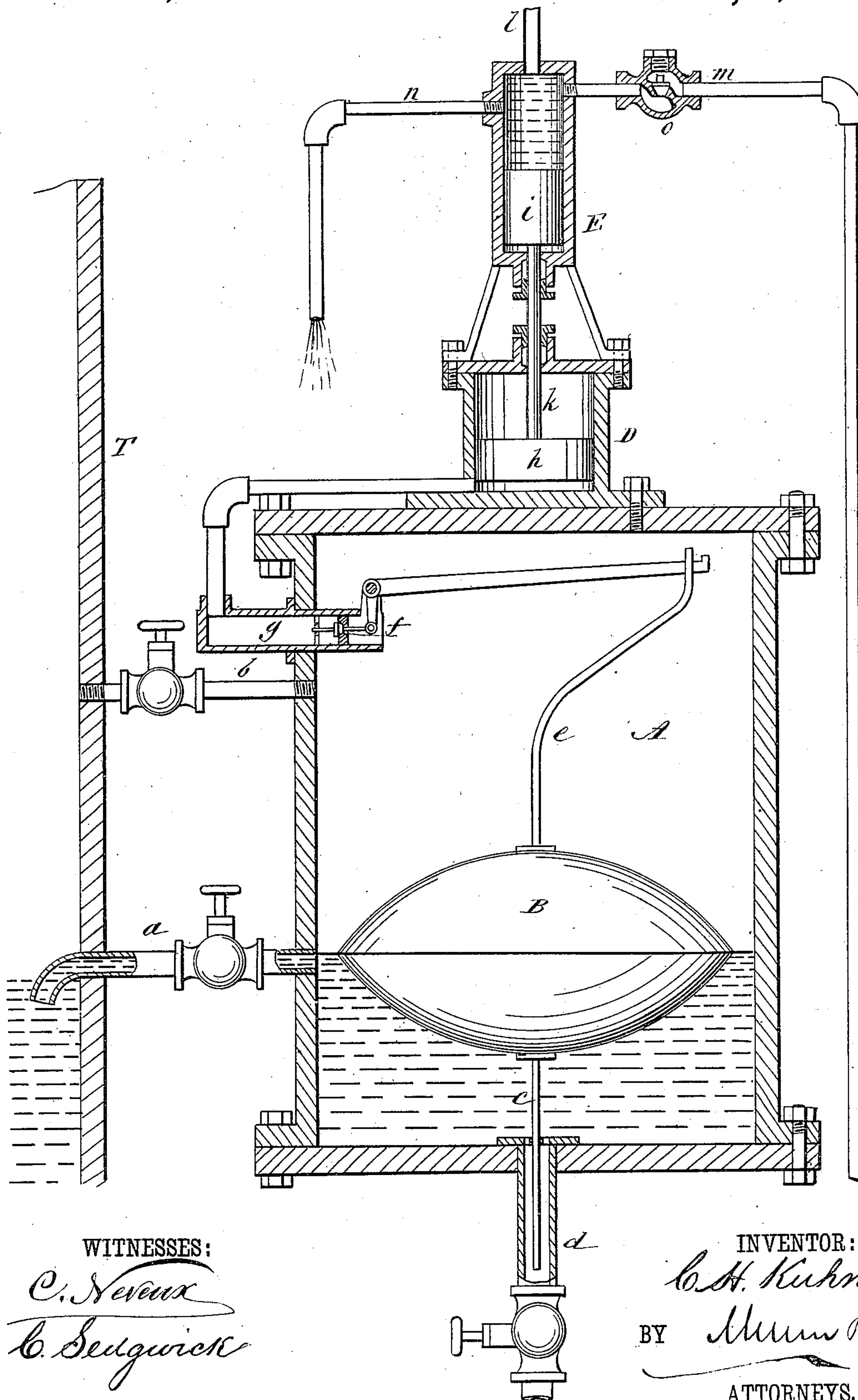


(No Model.)

C. H. KUHNE.
Feed Water Regulator.

No. 241,027.

Patented May 3, 1881.



WITNESSES:

C. Neveu
C. Sedgwick

INVENTOR:

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UNITED STATES PATENT OFFICE.

CHARLES H. KUHNE, OF BUTLER, PENNSYLVANIA.

FEED-WATER REGULATOR.

SPECIFICATION forming part of Letters Patent No. 241,027, dated May 3, 1881.

Application filed January 24, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. KUHNE, of Butler, in the county of Butler and State of Pennsylvania, have invented a new and Improved Feed-Water Regulator for Boilers, of which the following is a specification.

The object of my invention is to construct an apparatus for regulating the supply of water to steam-boilers, by which the water shall be prevented from falling too low and rising too high in the boiler, thereby avoiding the danger and damage incurred by such excess or scarcity of water.

The invention consists in a chamber connected with the boiler and containing a float that moves a steam-cock, combined with a feed-water chamber, and a steam-cylinder containing a piston, connected with the valve in the water-chamber in such manner that the rise and fall of the float permits or cuts off the flow of water to the boiler as required.

In the accompanying drawing my apparatus is shown in vertical section.

A is a cylindrical chamber, of suitable size, which is placed at the end or side of the boiler on a level with the water-space.

a is a pipe extending to the boiler, (shown at T,) and entering the same below the lowest water-level, so that the water shall stand at the same level in both the boiler and the chamber A.

b is a pipe passing from the upper part of chamber A to the steam-space of the boiler.

B is a float in chamber A, having a stem, c, at its lower side, extending into a blow-out pipe, d, so that the float is retained central, and having a stem, e, extending upward, and connected with the arm of a cock, f, that is in a pipe, g, which passes through the upper side of the chamber.

D is a small cylinder—say of one inch diameter—shown as imposed upon the chamber A, and supporting a still smaller cylinder, E, or water-chamber, which is about half the diameter of cylinder D.

h is a piston in cylinder D. i is a piston-valve in cylinder E, and k is a rod connecting

the two pistons. The pipe g from chamber A extends to cylinder D and enters the lower end.

l is the feed-water pipe from the pump, entering the top of cylinder E.

m is a pipe from the upper part of cylinder E, which pipe will pass to the boiler, and n is a waste-pipe, also connected with the upper part of cylinder E.

In operation, the water in the boiler and chamber A being as high as desired, the float B will be also raised and will have closed cock f, so that steam may not pass to cylinder D. Consequently the pressure of water on valve i will force the valve and the piston h down, and the water coming into the cylinder E by pipe l will go out by waste-pipe n. The return of water from the boiler is prevented by a check-valve, q, in pipe m. As the water-level in the boiler falls float B will descend until cock f opens, when the steam passing out by pipe g acts beneath piston h, raises it, and carries valve i over the end of waste-pipe n, so that the water is compelled to go by pipe m to the boiler until the level is again raised sufficiently to close cock f, when the position will be restored, as shown and first described.

With this apparatus automatic regulation of the feed-water is obtained, and the apparatus is durable and inexpensive.

The pipe a will preferably be turned down within the boiler, as shown, so as to prevent scum and other matters that may be floating on the water from entering the pipe.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

The feed-water regulator consisting of chamber A, connected by pipes a b to the boiler, float B, cock f, pipe g, cylinders D E, connected pistons h i, feed-water pipes l m, and waste-pipe n, combined and arranged for operation substantially as shown and described.

CHARLES HENRY KUHNE.

Witnesses:

W. H. HOFFMAN,
W. A. WRIGHT.