

(No Model.)

W. CUNNINGHAM.

BOILER FEEDER.

No. 346,269.

Patented July 27, 1886.

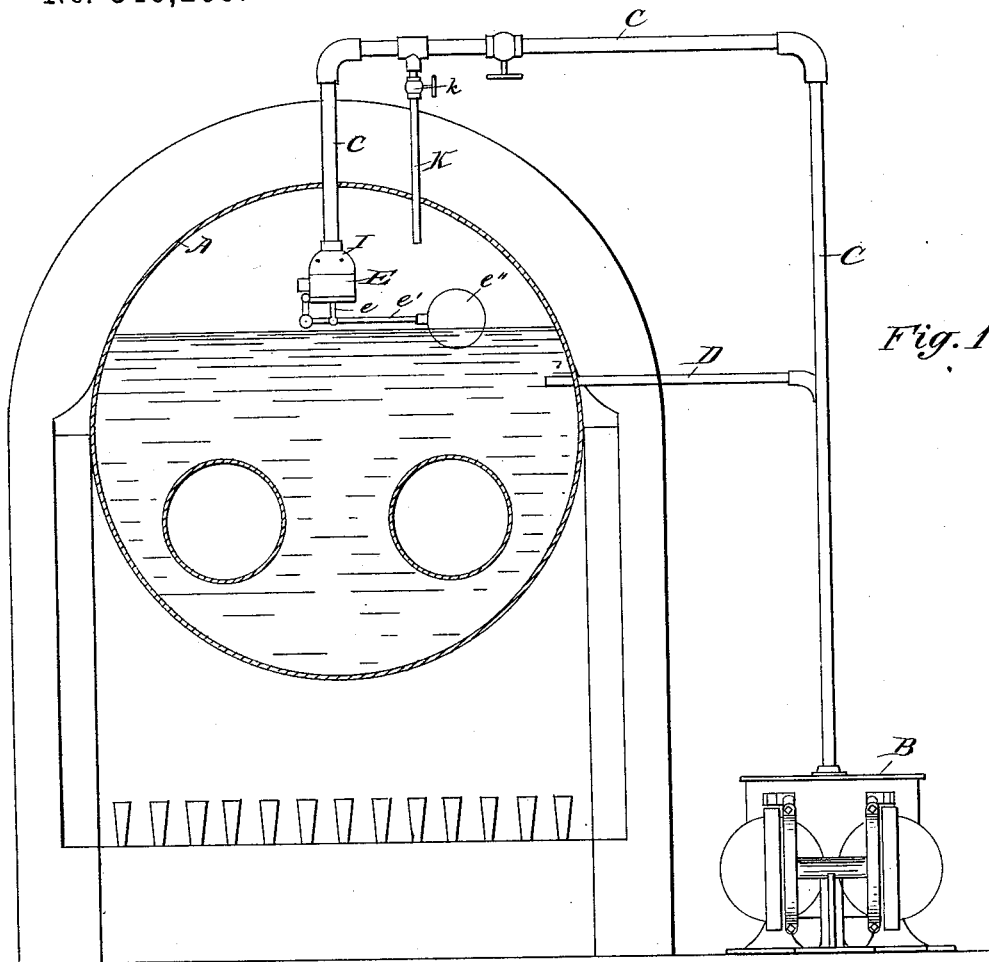


Fig. 1.

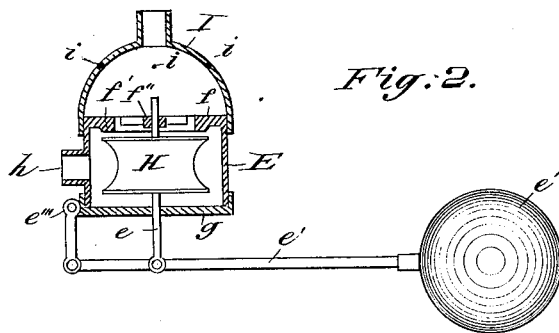


Fig. 2.

Attest:
J. A. Hurdle
J. Felbel

Inventor:
William Cunningham
By Amos W. Fager.
Atty:

UNITED STATES PATENT OFFICE.

WILLIAM CUNNINGHAM, OF WATSONTOWN, PENNSYLVANIA.

BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 346,269, dated July 27, 1886.

Application filed August 5, 1885. Serial No. 173,603. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CUNNINGHAM, a citizen of the United States, and a resident of Watsonstown, in the county of Northumberland and State of Pennsylvania, have invented a certain new and useful Improvement in Boiler-Feeders, of which the following is a specification.

My invention relates to an improvement in boiler-feeders, the object being to provide an automatic device whereby the water will be kept at a certain predetermined height in the boiler without attention by the engineer.

It consists in placing a balanced valve of peculiar construction upon the steam-pipe leading from the boiler to the feed-pump, and causing the same to be operated by a float within the boiler to open the valve and start the pump when the water falls below the required line.

In the accompanying drawings, Figure 1 is a transverse sectional view through a boiler with my device attached. Fig. 2 is a detached sectional view of the valve and float.

A is a steam-boiler. B is a steam-pump. C is a steam-pipe leading from the boiler to the steam-chest of the pump, and preferably entering the boiler in a perpendicular direction from its top, and D is the water-pipe leading from the water-cylinders of the pump to the boiler, and preferably entering the latter from the side below the water-line.

Upon the end of the steam-pipe C projecting into the boiler is placed a balanced valve, E, the stem *e* of which is made to project downward, and is pivoted to a lever, *e'*, pivoted at one end to the frame or case of the valve, and provided at its free end with a float, *e''*. I preferably construct this valve as shown in Fig. 2, wherein the valve chamber E is made cylindrical in shape and closed at its upper end by a disk, *f*, through which is made a valve-opening, around which is formed a valve-seat, *f'*, and which is provided with a guide-ring, *f''*, supported in the center by radial arms, and intended to act as a guide for the valve-stem. The lower end of the valve-chamber is closed with a centrally-perforated cap or head, *g*.

Within the valve-chamber E is mounted a valve, H, which is made circular in shape, grooved out on its circular face, and of a diameter smaller than the chamber E, and it is

mounted upon a valve-stem, *e*, which projects both above the valve through the guide-ring *f''* and below through the head *g*, and is pivoted to the lever *e'*, which latter is pivoted at one end to the case E by a link, *e'''*, and at the other to a hollow copper sphere, *e''*, to serve as a float. The steam is admitted to the valve-chamber E through an opening, *h*, through the side thereof. A dome or chamber, I, preferably hemispherical in shape, is secured upon the upper end of the valve-chamber to collect the steam as it issues through the valve and deliver it into the steam-pipe C, attached thereto.

Through the wall of the dome I of the valve are made several small perforations, *i i*, through which steam may enter at all times from the boiler, and these openings should be of such a size that while enough steam will not enter to start the pump there will be a sufficient quantity within the dome and steam-pipe at all times to counterbalance the pressure of steam upon the valve within the chamber E.

In lieu of the openings *i i*, a connecting-pipe, K, may be run from the boiler and connected with the pipe C outside the boiler, and provided with a valve to regulate the amount of steam supplied to the said pipe C and valve-dome.

What I claim as my invention is—

1. The combination, with a steam-pipe leading from a steam-boiler to a feed-pump, of a balanced valve on said pipe within the boiler, having a valve-chamber, E, perforated dome I, valve H, lever *e'*, pivoted to valve-stem and to valve-chamber, and float *e''*, substantially as and for the purpose set forth.

2. In a boiler-feeder, the combination, with a feed-pump and with the steam-pipe leading thereto, of perforations leading into said pipe or the valve thereon above the valve-seat to supply a back-pressure of steam upon the valve, substantially as and for the purpose set forth.

Signed at Watsonstown, in the county of Northumberland and State of Pennsylvania, this 18th day of July, A. D. 1885.

WILLIAM CUNNINGHAM.

Witnesses:

A. S. LAMM,
D. C. HOGUE.