

B. Fitts,
Steam-Boiler Water-Feeder,
No. 10,695, Patented Mar. 28, 1854.

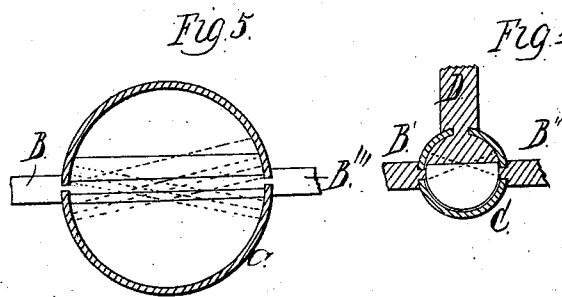
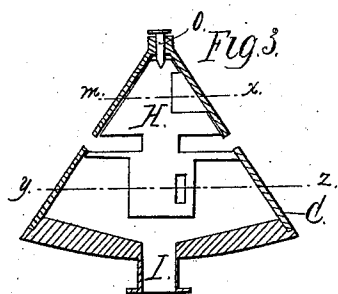
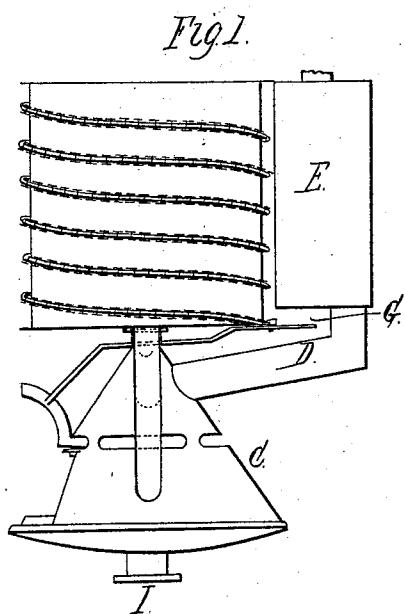
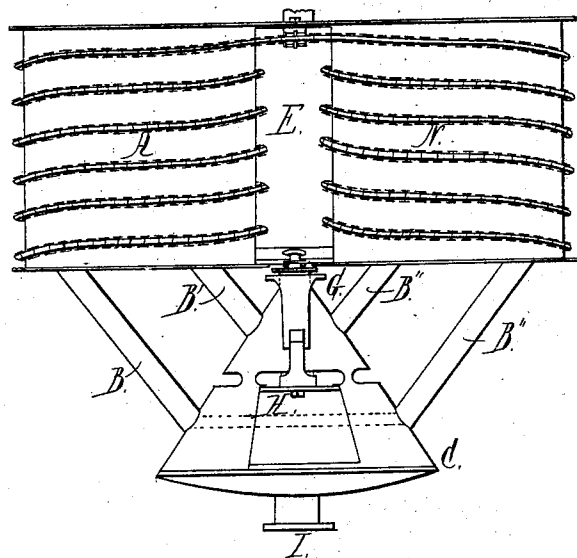


Fig 2.



UNITED STATES PATENT OFFICE.

BENAI AH FITTS, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN FEED-WATER APPARATUS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **10,695**, dated March 23, 1854.

To all whom it may concern:

Be it known that I, BENAI AH FITTS, of the city and county of Worcester, and State of Massachusetts, have invented a new and useful Machine for Feeding Steam-Boilers, called an "Automatic Feeder;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is an end view; Fig. 2, a front view; Fig. 3, a vertical section of the valve-box and valve; Fig. 4, a transverse section through *m x*, and Fig. 5 a section through *y z*, the same letters referring to the same parts in all.

The machine consists of two reservoirs, as A N, Fig. 2, with tubes B B' B'' B''' attached, leading to valve-box C, through which openings are made for the passage of steam and water, also one opening into pipe D, leading to reservoir E, filled with wire gauze or other ready conductor of heat, through which a passage is left through the central part more open than the rest; or the pipe may be of sufficient size and filled to answer for the same purpose; the reservoir E to be connected to the supply of cold water at F or other convenient place. The reservoirs are surmounted with one or more turns of a chain or wire, one end of which is attached to some part of the reservoirs or immovably fixed and the other attached to lever G. The valve H and its box or seat C are made of a conical form, or nearly so, so that the expansion of the same will not prevent a perfect fit, and admit of the friction being relieved by the set-screw *o*, made pointed for a center for the valve to turn on. The valve H is so formed that a passage may be open from B to B''', entirely shut off from the rest, and B' and B'' be closed, and when the valve is turned toward N the steam may pass through B''' into N, and a passage from D through to B', and when the valve is turned toward A the

steam may pass through B into A and a passage open from D through B'' into N, the other openings not mentioned being shut. The valve H having a stem or arm attached and connecting with lever G, whose fulcrum so arranged to give proper motion to the valve to shift the passages, as described, the chain is provided with friction-rolls at each joint to insure its revolving or sliding on the surface of the reservoir.

To put it into operation, the steam-pipe being attached at I and cold water at F, the valve is turned toward N. The steam passes through B''' into N, (the chain so arranged as to slack on the left hand of lever G and tight on the right,) and heating and expanding it, the chain rendering will draw the lever, and turn the valve, and shut off the steam, and open the passage through the body of the valve, and allow the steam to pass into A and partially condense, and, turning a little more, open the passage through B'' to D. The steam will condense into the water or reservoir E and the water flow into and fill or nearly fill N, while the steam passing into A will heat that and reverse the motion of the valve, N contracting by the condensing and filling with water, and, on the valve turning so as to open the passage B''', the steam passes into the reservoir, displacing the water, allowing it to run down through B''' and I into the boiler, the machine continuing its action so long as steam is admitted at I and water at F.

What I claim as new, and desire to secure by Letters Patent, in feeding apparatus for steam-boilers, is—

The arrangement of the steam and water chambers, chains, pipes, and valves, constructed and operated as and for the purposes herein set forth.

BENAI AH FITTS.

Witnesses:

WM. A. HARMON,
JAS. G. ARNOLD.