F. A. WELLS.
Automatic Boiler-Feeder.

No. 207,326 Patented Aug. 20, 1878.

Fig. 1.

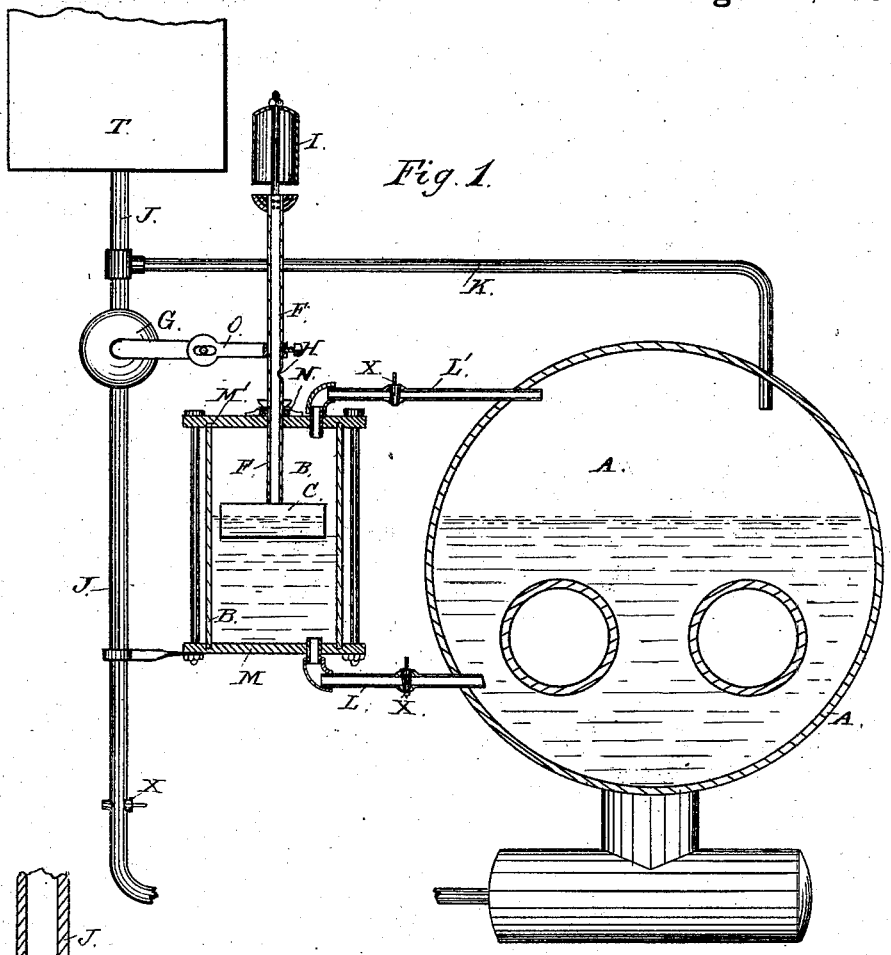
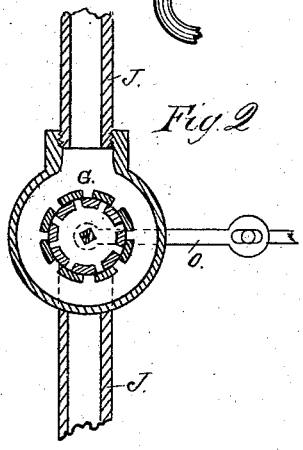


Fig. 2.



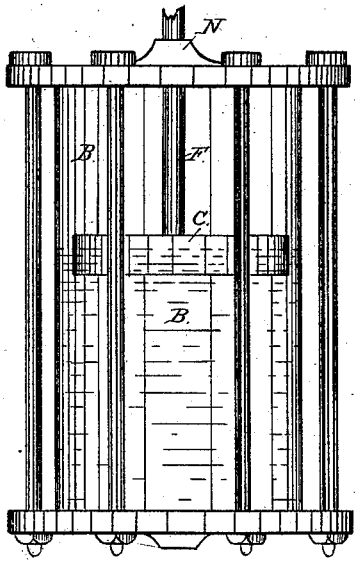


Fig. 3.

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FRANK A. WELLS, OF MEMPHIS, TENNESSEE.

IMPROVEMENT IN AUTOMATIC BOILER-FEEDERS.

Specification forming part of Letters Patent No. **207,326**, dated August 20, 1878; application filed June 5, 1878.

To all whom it may concern:

Be it known that I, FRANK A. WELLS, of Memphis, in the county of Shelby and State of Tennessee, have invented a new, simple, and useful Improvement in Automatic Boiler-Feeders, of which the following is a specification:

The object of my invention is to furnish an automatic boiler-feeder that is effective, simple, and of few parts—one that requires no "ground" or carefully-fitted joints to prevent the escape or leakage of steam and water; a feeder that will control the water in steam-boilers at a desired or proper level or height; a feeder of which the float-chamber is made of glass, thus enabling the person in charge of the boiler to ascertain and see at all times the amount of water in the float-chamber, which, of course, contains the same amount of pressure and level of water as the boiler, also to see the working of the float which operates the valve for feeding the boiler; a feeder that can be used for any kind of a pump for supplying the boiler, either a steam or force pump; a feeder that, in case the water should get too low, will alarm the engineer or person in charge.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, where similar letters indicate like parts, and in which—

Figure 1 represents a sectional elevation of a feeder embodying my invention. Figs. 2 and 3 represent details hereinafter more particularly described.

A represents a boiler, looking at it from the end. L L′ are, respectively, a water and steam pipe, the objects of which are twofold—one to convey and maintain the same amount of pressure in float-chamber B as in boiler A, and the other object is to connect the feeder to boiler A. The float-chamber B is made of glass of sufficient strength to resist the pressure of steam used.

M M′ are metal chamber-heads, which are bolted securely together, the bolts passing from one head to the other outside and against the glass chamber. Through the chamber-heads M M′ the pipes L L′ are connected on one end and to the boiler on the other, thus supplying the chamber with steam and water and holding it securely to the boiler A.

C is a float, which is operated by the pressure of steam and water on each side of it, thus keeping the center of float C on a level with the water in the boiler A.

F is a tubular float-rod, which is connected to float C by one end. The other end passes through a gland or stuffing-box, N, on upper chamber-head, M′, thence up to a link or arm, O, which is attached to it. The said arm or link is connected to the shaft of an oscillating cylindrical valve, G, made of incorrodible metal, which works in a cylindrical valve-seat, the valve and its seat to operate in being surrounded with corresponding ports. Between the valve-seat and the outside casing there is a space or channel which is always filled with steam or water, (as the case may be regarding the pump,) which balances the valve, the pressure being all around it.

H is a small hole in the float-tube F, which is used to sound an alarm on the steam-whistle I in the event of the water falling below a safe level, which brings the opening H within the chamber B.

J is a water-pipe connecting a water-tank, T, to valve-chamber, and is used only when feeder is intended for a force-pump; otherwise it is disconnected.

K is a steam-pipe leading from the boiler A to the valve-chamber, and used to supply steam to the steam-pump, but only when the feeder is intended for a steam-pump; otherwise it is disconnected.

X X X are stop-cocks placed in the pipes as convenience may require.

The operation of the feeder is as follows: When the water in the boiler A (likewise in the float-chamber B) falls below its proper height or level the float C descends with the water, which causes valve to revolve slightly or turn sufficiently to admit water or steam (as the case may be in regard to the pump used) to pass from the valve-chamber or channel through the valve-ports to the center of the valve G, thence to pipe leading from the valve to the pump. The pump will then force water into the boiler until the water rises to its proper height, when the float will close the ports of the valve, and so on alternately.

Should the water in the boiler get below its proper height and the feeder refuse to work or supply the boiler, it will cause the float C to descend with the water until the small hole H is brought within the float-chamber, when steam will ascend through the float-tube F to the alarm-whistle I, which will alarm the engineer or person in charge.

In case the feeder is used for a force-pump the cocks X are to always remain open, excepting when the boiler is to be cleaned, when it will be necessary to close them to keep the water in the tank from flowing through pipes, valve, and pump to the boiler, (as the valve will open as soon as the water is out of the boiler.)

After the boiler is cleaned the cocks may be opened, when the water will fill the boiler to its proper height, when the float will close the valve.

In case the feeder is used for a steam-pump the cocks X are used for convenience only.

Having thus described my invention, the following is what I claim as new and desire to secure by Letters Patent:

1. The combination, with a steam-boiler, of a float-chamber, formed of glass, in order to expose the float fully to view, and communicating with the boiler by separate pipes L L′, below and above the proper water-line.

2. The balanced valve G, formed with a number of ports, and surrounded by a chamber through which water flows into and through it, so as to balance the pressure, in combination with the float-rod F and jointed connecting-arm O, as and for the purpose stated.

3. The tubular float-rod F, carrying the whistle I, and perforated at H, so as to pass steam to the whistle when the perforation descends into the float-chamber, as shown.

4. The combination, with a boiler, A, of a float-chamber, B, connecting-pipes L L′, float C, rod F, arm O, and balanced supply-valve G, substantially as and for the purposes set forth.

FRANK A. WELLS.

Witnesses:
WILLIAM H. GODDARD,
PETER A. TIGHE.