(No Model.)

W. B. CULVER.

BOILER FEED.

No. 280,721. Patented July 3, 1883.

Fig. 3.

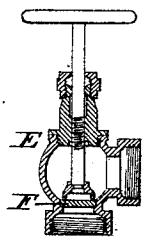
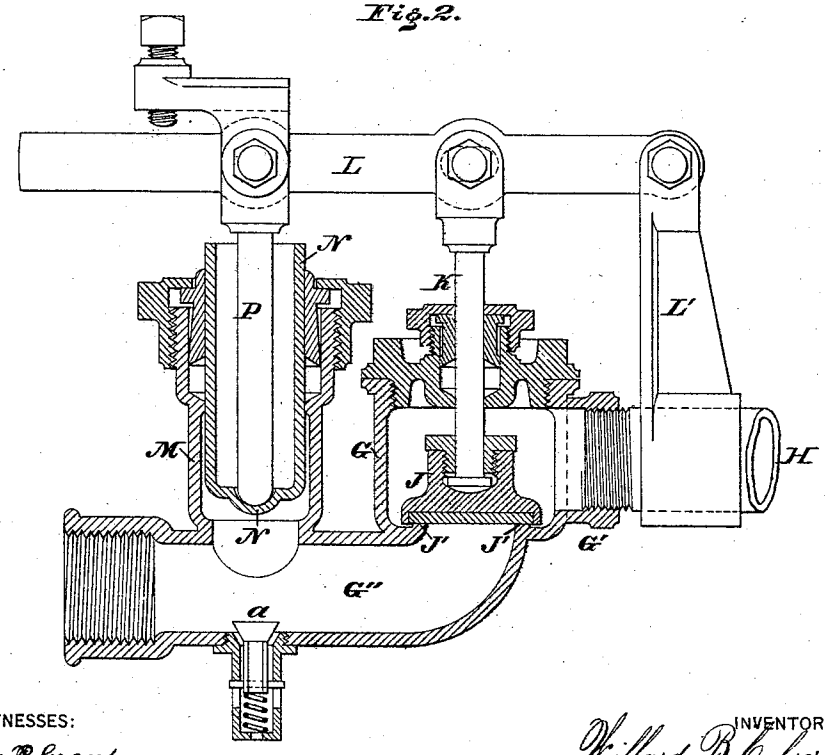


Fig. 1.

Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLARD B. CULVER, OF PITTSTON, PENNSYLVANIA.

BOILER-FEED.

SPECIFICATION forming part of Letters Patent No. 280,721, dated July 3, 1883.

Application filed February 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLARD B. CULVER, a citizen of the United States, residing at Pittston, in the county of Luzerne, State of Pennsylvania, have invented a new and useful Improvement in Automatic Safety Boiler-Feed, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a front view of the boiler-feed embodying my invention. Fig. 2 is a vertical section of a detached portion thereof. Fig. 3 is a vertical section of another detached portion.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a steam boiler or generator provided with means whereby in the event of low water the boiler will be automatically supplied, as hereinafter fully set forth.

Referring to the drawings, A represents a steam-boiler, which, excepting as far as relates to my invention, is of usual construction.

B represents a water tank or reservoir, which is properly supported adjacent to the boiler, and is in communication therewith by means of a pipe, B′, so as to be under pressure of the boiler, said pipe having a cock, B″.

C represents a pipe, which is connected with the boiler or one of the boilers of a series, and projected thereinto to what may be termed "the alarm water-line," said pipe having, outside of the boiler, cocks D D′ and a valve, E, the latter being between the cocks D D′, and provided with a fusible plug or head, F.

G represents a valve-chamber having a pipe or branch, G′, which is attached to a pipe, H, leading into the reservoir B, and a pipe or branch, G″, which is connected with the pipe C, adjacent to the cock D′.

J represents the valve in the chamber G; J′, the seat thereof, and K the valve-stem, which is pivoted to a rising and falling arm, L, the fulcrum L′ whereof is supported on the branch G′ or pipe H, it being noticed that water from the reservoir B enters the valve-chamber through the pipe H, and exerts its pressure on the valve J and holds the same closed on its seat.

Rising or projecting from the branch G″, and communicating therewith, is a branch, M, in which is fitted a plunger, N, having a stem, P, the latter extending parallel with the stem K, and having a pivotal connection with the arm L.

The boiler is supplied with water by any suitable means, and the reservoir is also supplied with water independent of the boiler, the cocks B″ D D′ being closed during the operation of supplying or filling said reservoir, after which said cocks are opened, the valve E remaining closed as its operative position. When the water in the boiler is at the proper height or line, no service is required of the reservoir B, and the parts between the pipes H C remain inoperative. When, from neglect, mismanagement, or accident, the water in the boiler falls to the alarm-line and uncovers the inner end of the pipe C, steam from the boiler enters said pipe C and reaches the fusible plug F, thus melting the same, and thereby opening the valve E. Steam is thus admitted into the branch G″ and directed against the plunger N, so as to raise said plunger, and consequently the arm L, whereby the valve J is lifted from its seat and communication established between the pipe H and branch G″. Water primarily from the reservoir B now leaves the valve-chamber G and flows through the branch G″ and valve E into the pipe C, and thus into the boiler, whereby the latter is again supplied and danger averted. The branch G″ is provided with a self-closing valve, *a*, whereby any leakage through the valve J or air in said branch may escape, said valve closing when the steam is admitted into said branch. A cock may, however, be employed in lieu of said valve *a*, so that when left open steam admitted to the branch may escape or blow off through said cock and serve as an alarm.

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

1. An automatic water-feeding device for a steam-boiler, operating in connection with a valve having a fusible plug, said valve being between said device and boiler and communicating with both, substantially as described.

2. A steam-boiler, in combination with an

independent water-reservoir, a valve having a fusible plug, and a plunger and valve connected to move as one, whereby when the water in the boiler is low the fusible plug is melted, the plunger is operated, and its connected valve opened, thus automatically admitting water from said reservoir to the boiler, substantially as described.

3. An independent water-reservoir communicating with a steam-boiler, in combination with a pipe communicating with the reservoir, a pipe communicating with the boiler, a valve having a fusible plug, a plunger and valve connected as one, and a valve-chamber with branches, said valve having the fusible plug being between the pipe which leads to the boiler and the branch which leads to said connected plunger and valve, substantially as and for the purpose set forth.

4. The pipe C, with cocks D D′, and valve E, having a fusible plug, in combination with the plunger N, valve J, arm L, chamber G, with branches or pipes G′ G″, pipe H, and independent water-reservoir forming an automatic safety boiler-feed, as set forth.

5. The reservoir B, pipe H and pipe C, and the chamber G, in combination with the pipe or branch G″, having a valve, *a*, substantially as and the purpose set forth.

WILLARD B. CULVER.

Witnesses:
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