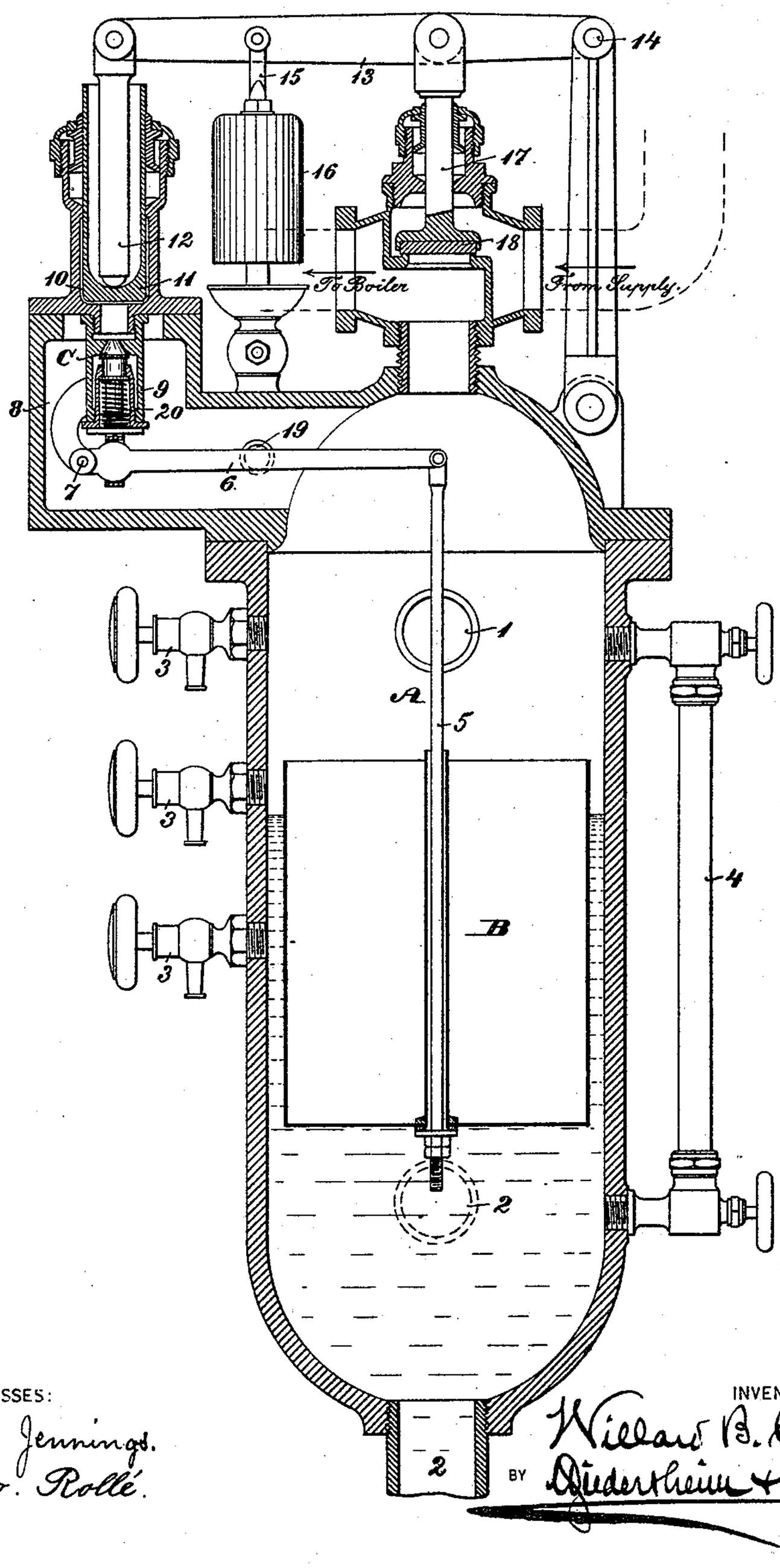
(No Model.)

W. B. CULVER.

SAFETY BOILER FEED.

No. 436,284. Patented Sept. 9, 1890.



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SAFETY BOILER-FEED.

SPECIFICATION forming part of Letters Patent No. 436,284, dated September 9, 1890.

Application filed March 22, 1888. Serial No. 268,087. (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 a Safety Boiler-Feed, which improvement is fully set forth in the following specification and accompanying drawing.

My invention consists of a safety boiler-feed having novel features, as will be hereinafter fully set forth, the same being more particularly an improvement in the device for which Letters Patent of the United States No. 280,721 were granted to me on the 3d day of July, 1883.

The figure represents a vertical section of a safety boiler-feed embodying my invention.

Referring to the drawing, A represents a chamber or vessel, which is connected with a steam-boiler by means of the steam-pipe 1 and water-pipe 2, said chamber having cocks 3 and a water-gage 4. Within the chamber A is a float B, which is freely supported on a vertical rod 5, the latter being connected with a lever 6, fulcrumed, as at 7, within a chamber 8 at the side of the upper end of the chamber A, said lever being attached to a valve C, the shell 9 whereof is in communication with the chamber 8, and with a chamber 10, which rises from the wall of the chamber 8. Within the chamber 10 is a plunger 11, having a stem 12, which is connected with a lever 13, whose fulcrum 14 is supported on the chamber A. Connected with the arm or lever 13 is the stem 15 of a steam-whistle 16, and also the stem 17 of a valve 18, said whistle being in communication with the chamber A, as at 19, and said valve being connected with a pipe leading from a reservoir, tank, &c., containing water under pressure of steam, and also with a pipe leading to the boiler, said pipes being shown in dotted lines.

It will be seen that when the boiler is properly supplied with water the level of the same is communicated to the chamber A, and the float B occupies an elevated or normal position, so that its weight is not transmitted to the rod 5, the several parts being disposed as shown in the drawing and the valves closed. Should the boiler be insufficiently supplied with water, the level of water in the chamber A will lower and the float descends, whereby its weight is superimposed on the shoulder or nut on the bottom of the rod 5, thus lowering said rod, and consequently the lever 6, so that the valve C, which heretofore has been held closely on its seat by the action of the spring 20, is opened, and steam is directed through the valve chamber or shell 9 into the chamber 10, thus raising the plunger 11 and lever 13. The stem or lever 15 of the whistle is operated by the lever 13, so that steam is directed to the whistle, causing the same to be blown, the consequent alarm directing attention to the condition of the boiler. Simultaneously therewith the valve 18 is opened and water from the reservoir, &c., is admitted through the same to the pipe which leads to the boiler, so that the latter is promptly supplied and the danger averted. When this is accomplished, the float B rises, the valve C closes, the lever 13 falls, the plunger 11 and valve 18 return to their normal position, and blowing of the whistle ceases. The pipe 2 may be connected with the chamber at the bottom thereof, or above the same at the side, as shown by the dotted lines.

While I have described the part B as a float, it is evident that it may be a vessel open above, so as to be filled with water when the chamber A is supplied to the top gage-cock. In this case, as there is water both within and around said vessel, the rod or spindle 5 and spring 20 of valve C sustain only the weight of the vessel, but not of the water therein. Now when the water in the chamber falls, due to insufficient supply in the boiler, the vessel, as weighted with water, exerts its weight on the said rod or spindle and lowers the same, whereby the valve C is opened, and the other operations are performed similarly, as has been stated. The position of the vessel B on the rod 5 may be regulated by means of a nut on the screw-threaded end of the rod, so as to adjust the same for operating the lever 6 at different heights of water, as may be desired.

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

1. A boiler-feed consisting of a chamber having communication with the steam and

water of a steam-boiler, and provided with a vessel which is connected with a valve for the escape of steam from said chamber, a valve connected with a water-supply and also with the boiler, a lever attached to the last-named valve, and a plunger operated by the steam-escape valve and secured to said lever, said parts being combined substantially as described.

2. A boiler-feed having the chamber A, the side chamber 8 with steam-outlet, the pivoted lever 6, the rod 5, secured to said lever, the valve C, connected to said lever and controlling said steam-outlet, and the vessel B, loosely fitted on the said rod 5 and adapted to operate the said lever 6, said parts being combined substantially as and for the purpose set forth.

3. A boiler-feed having a water and steam chamber, a side chamber communicating with said first chamber and having a steam-outlet, a lever pivoted in said side chamber and provided with a valve controlling said steam-outlet, a rod in said first chamber, a vessel adapted to bear on the rod so as to operate said lever and valve, and a spring adapted to normally close said valve, said parts being combined substantially as and for the purpose set forth.

4. A boiler-feed consisting of the chamber A, in combination with the boiler, a side chamber communicating with said chamber A, the chamber 9 with steam-outlet, the lever 6 with rod 5, the vessel B on said rod, the chamber 10, communicating with said chamber 9, a steam-whistle connected with said chamber 8, and a water-supply pipe leading to said chamber A, and a pivoted lever having a plunger working in chamber 10, a stem adapted to operate said whistle, and a valve controlling said water-supply pipe, substantially as described.

5. In a boiler-feed, the vessel B, the chamber A, having the plunger-chamber 10, and the whistle 16, communicating with said chamber A, substantially as and for the purpose set forth.

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Witnesses:
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