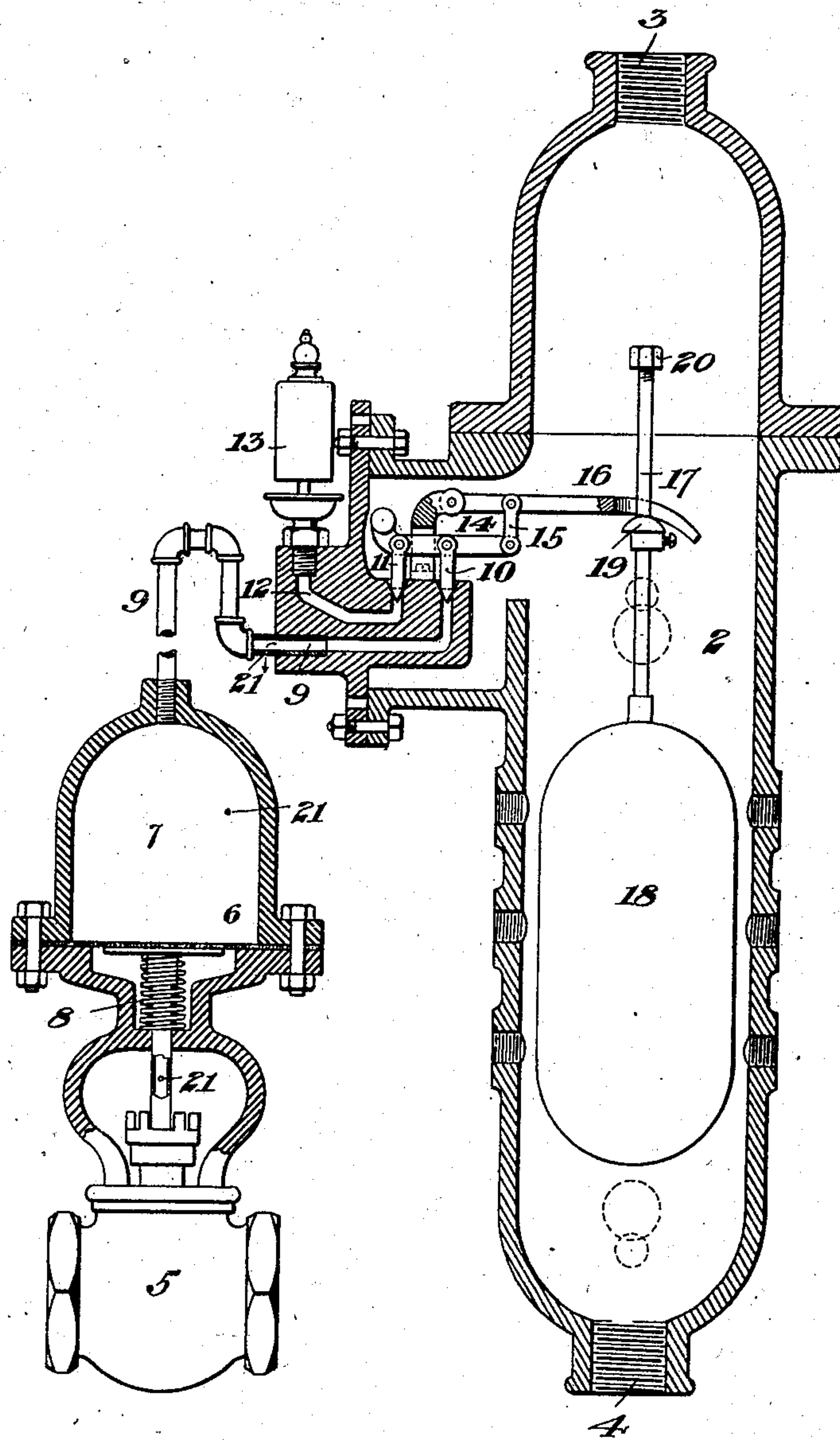


No. 728,348.

PATENTED MAY 19, 1903.

J. M. WILLIAMS.
BOILER FEEDER APPARATUS.
APPLICATION FILED MAY 15, 1902.

NO MODEL.



WITNESSES

Thomas W. Baxendell
L. A. Comer

INVENTOR

John M. Williams

UNITED STATES PATENT OFFICE.

JOHN M. WILLIAMS, OF PITTSBURG, PENNSYLVANIA.

BOILER-FEEDER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 728,348, dated May 19, 1903.

Application filed May 15, 1902. Serial No. 107,507. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. WILLIAMS, of Pittsburgh, Allegheny county, Pennsylvania, have invented a new and useful Boiler-Feeding Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, which shows in vertical section apparatus constructed in accordance with my invention.

10 In the drawing, 2 represents a water-column which is connected, respectively, to the steam and water spaces of the boiler by pipe connections 3 4.

5 5 is the valve interposed in a pipe which leads to the boiler from a feed-pump, and 6 is a diaphragm set in a chamber 7 and adapted to be operated by the steam-pressure therein to close said valve.

20 8 is a spring by which the valve is returned to open position when the steam-pressure is relieved.

9 is a passage leading from the chamber of the water-column to the chamber 7 and adapted to be closed by a valve 10.

25 11 is a valve which controls a passage 12, leading to a steam-whistle 13 or other alarm-signal. The valves 10 and 11 are mounted on or connected to a lever 14, suitably connected by a link 15 and lever 16 or otherwise to the stem 17 of a float 18 in the chamber 2. When the water in the column 2 is at the normal level, as shown in the drawing, both valves are seated. If the water should rise above the normal limit, an adjustable collar 19 on the stem 17 engages the lever 16 and raises the lever 14, which moving on the valve 11 as on a fulcrum unseats the valve 10 and admits steam to the passage 9 and chamber 5. If the water in the column 2 should fall below the normal level, a projection 20 on the stem 17 will engage the lever 16, move it in the opposite direction, and causing the lever 14 to move on the valve-stem 10 as on a fulcrum will unseat the valve 11. This is a very desirable and effective arrangement of the valves.

50 When the valve 11 is opened by falling of the water in the boiler and in the water-column below the normal level, it will admit steam to the passage 12 and will sound the whistle. If, on the other hand, the valve 10 should be unseated by rise of the water above

the normal level, the steam passing through the passage 9 will depress the diaphragm 6 and close the valve of the feed-pipe 5. So long as the float is held up by the water at a sufficient height the valve 5 is held closed and the feed-water does not enter the boiler. If, however, the water in the boiler and the water-column should fall, the valve 10 will be seated and the supply of steam cut off from the chamber 7. The steam contained in this chamber will then escape through a bleeder-passage 21, which may be placed either in the passage 9 or in the chamber 7 or in the stem of the valve 5, if the latter is made hollow, or may be placed at any other convenient location. This bleeder-passage is made sufficiently small that the leakage of steam through it will not be injurious when the valve 10 is opened, but is large enough to relieve the pressure from the chamber 7 when said valve is closed. When the pressure in the chamber is relieved, the valve will be re-opened by the spring 8 and the feeding of the water to the boiler will proceed.

In case of operating a pump by the use of this feed-regulator the steam passing to the pump would open the valve instead of the spring.

Instead of the diaphragm 6 I may employ a suitable piston, which is a well-known equivalent of a diaphragm.

My apparatus is adapted for other purposes than for boilers wherever the automatic operation of a valve by variation of water-level is desired, such as steam-traps, &c. It may also be modified in construction in various ways, since

What I claim is—

1. The combination of a valve adapted to be unseated by a change of water-level, and having a steam-passage controlled thereby, a moving element actuated by the steam, and a valve moved thereby, said steam-passage having a bleeder-passage of relatively small size communicating therewith; substantially as described.

2. The combination of a valve adapted to be unseated by a change of water-level, and having a steam-passage controlled thereby, a moving element actuated by the steam, a valve moved thereby, a water-column, and a float by which the first-named valve is oper-

ated, said steam-passage having a bleeder-passage of relatively small size communicating therewith; substantially as described.

3. The combination of valves 10 and 11 having
5 ing ports controlled thereby, a lever to which the valves are connected, and a float adapted to move said lever in opposite directions whereby motion in one direction will cause the lever to fulcrum on one valve and move

the other, and motion in the other direction will cause a reverse operation of the valves; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN M. WILLIAMS.

Witnesses:

GEO. B. BLEMING,

H. M. CORWIN.