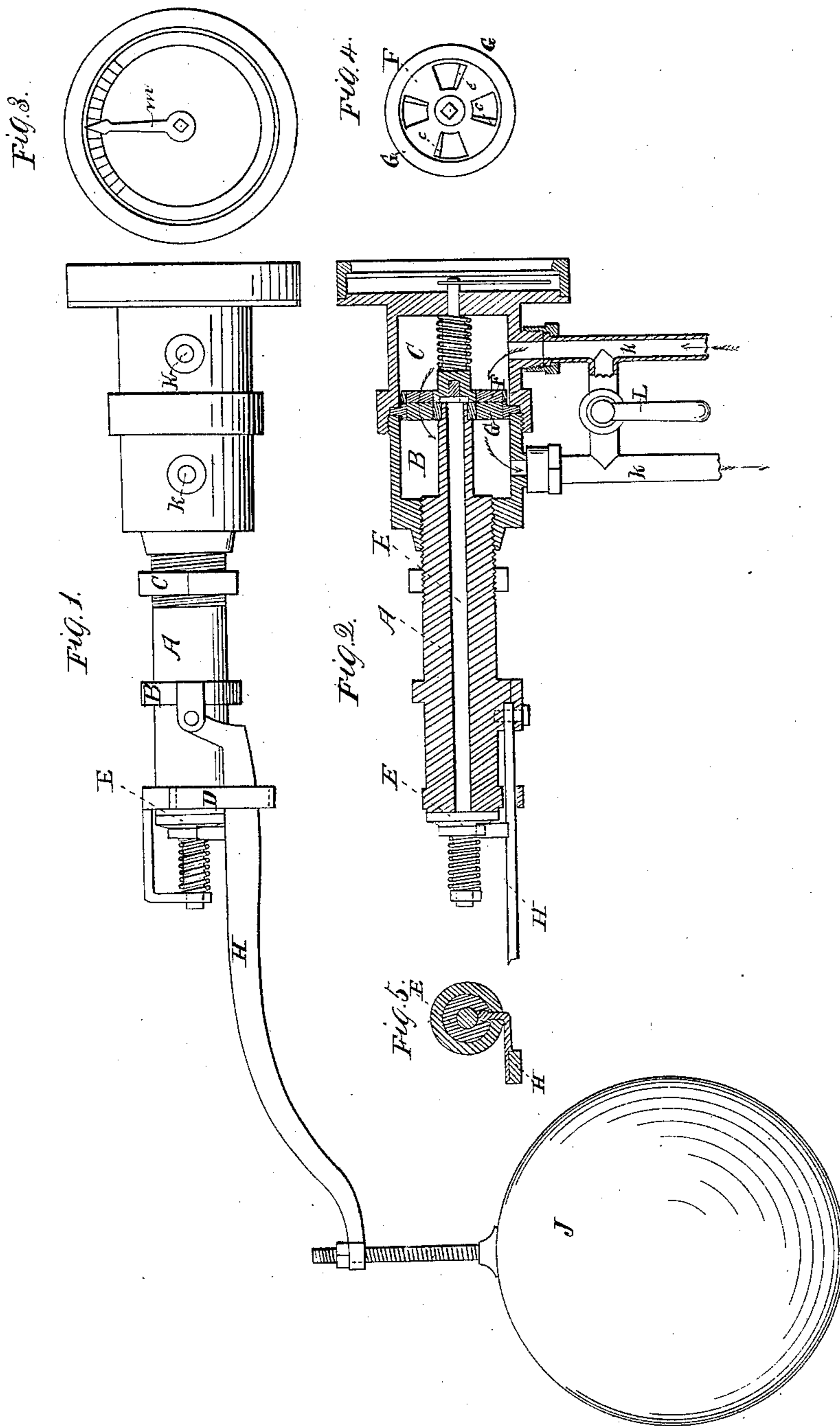


S. R. Cline,

Steam-Boiler Water-Feeder,

Nº 9,895,

Patented Aug. 2, 1853.



UNITED STATES PATENT OFFICE.

SAMUEL R. CLIME, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS TO REGULATE THE SUPPLY OF WATER TO STEAM-BOILERS.

Specification of Letters Patent No. 9,895, dated August 2, 1853.

To all whom it may concern:

Be it known that I, SAMUEL R. CLIME, of the district of Spring Garden, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Apparatus or Machine for Keeping Up a Regular Supply of Water in Steam-Boilers; and I do hereby declare that the following is a full and exact description thereof.

10 The nature of my invention consists of a water chamber outside the boiler, provided with a valve-seat and valve, and which by means of an internal arrangement, the water is regulated in its course to the boiler in
15 such quantities as may be required; the valves upon said valve seat is caused to be opened and closed, by the movement of said internal arrangement; thus producing the
20 regular supply of water in the boiler. Thus obviating the danger of explosions caused by the sudden admission or insufficiency of water; the operation of the machine by means of a dial and hand being accurately
25 indicated.

To enable others skilled in the art to make and use my invention, I shall proceed to describe its construction and operation.

30 Through the head or any other part of any of the known forms of boilers, I should insert the apparatus or machine represented at Figure 1 in the accompanying drawing, said machine passing through the head or
35 other part of the boiler, at A the collar marked B, being inside of the boiler, and the nut C, by means of a threaded cut on the surface of said machine at A, and also in the
40 head or other part of the boiler, corresponding with the thread cut on the surface of said machine, and of nut C, screwing up against the outside of the boiler, thus holding it safely in its place and preventing the escape of steam.

45 All of the machine from the nut C, screwing up tightly against the outside of the boiler as aforesaid in the direction of the letters K K is on the outside of the boiler, the part represented by the letters K K composing the aforesaid water chamber, for
50 a view of which it will be necessary to turn to Fig. 2. Fig. 2 represents Fig. 1 cut through the middle.

55 The water-chamber occupying the space represented by K K, Fig. 1, is divided into two parts as represented by B C, Fig. 2, F F, and G G represents the valve seat and

valve, the valve seat G G, being stationary and the valve F F, movable, a full view of which is given at Fig. 4. The pipes K K, one of them is from the hydrant, and the
60 other conducts the water after having passed through the valve F, F, and seat G G in the direction of the pump. The arrows sufficiently indicate the course of the water. Now we will suppose the water from the
65 hydrant flowing in the direction of the water-chambers. There is nothing to prevent its entrance, and it must entirely fill up that part of the chamber represented by C, but before it can get to the pump
70 it has to pass through the valve F F and seat G G. If there be a sufficient quantity of water in the boiler, the passage will be closed, if not sufficient the passage will be open in proportion to the quantity required;
75 if nearly enough, the passage will be small, such as is represented by the letters G, in Fig. 4.

Having thus shown how the water on its way to the boiler passes through the valve
80 and seat, it becomes necessary to explain how the size of the aperture between the valve and seat is regulated. As before remarked, the valve F F being movable and valve seat G G being stationary, F F, being
85 ground and fitting water tight to G G. The openings in valve seat and valve correspond precisely in size and in relative position, and the size of the aperture between them is varied, simply by turning the valve
90 F F. This is done by means of the rod E E as is represented by Fig. 2, running through the center of the machine and turning at the end inside of the boiler, in an arrangement fastened to the top of the machine, in
95 order to secure it in its place near the end of which as at E is a small wheel and cap, which forms a cogle joint or cogs, said cap being ground and fitted steam tight against the body of the machine, and made
100 to retain its position by means of a spiral spring placed against the abovementioned arrangement, supporting the end of the rod E passing through the center of the machine in Figs. 1 and 2 and Fig. 5. The motion
105 of this wheel and thus of the rod to which it is attached, and also of the valve F F, at the other end of the said rod, is produced by an appendage to the lever H as in Fig. 5 which appendage at one end
110 fits into one of the cuts or cogs in the circumference of the said wheel, and at the

other is fastened securely upon lever H, said lever moving at one end upon the pivot fastened on the collar B as in Fig. 1 and being kept in its place by means of the
 5 guide D, Fig. 1 deriving its motion from the float J, and the position of said float with regard to the lever being regulated by means of a thread cut upon the bolt fastened on the upper end of the said float J.
 10 Nor is this the only result produced by the motion of the rod E E, as in Fig. 2.

On the valve F F, is affixed a stem and journal. Said journal extends through the end of the chamber around such stem is
 15 placed a spiral spring to keep said valve to its place against the valve seat. The slightest motion of the rod E E is communicated to such stem on the other end of which is fastened a hand the motion of which the
 20 hand is regulated thereby; and which by means of a dial and figures cut thereon as in Fig. 3 indicates the operation of the apparatus.

The pipes K K Fig. 2 are attached by
 25 means of a double right and left thread cut thereon, or otherwise, so as to be detached from the machine without difficulty.

The stop cock L placed in the pipe connecting the pipes K K in order to supply
 30 the boiler with the requisite amount of water allowing for the wastage of water through the night and to increase the convenience of my invention.

Any given height of water may be ob-

tained by shifting the position of the ar- 35
 rangement or machine on the boiler, or by altering the form of the lever H, by changing the position of the valve F F, and seat G G, or by elevating or lowering the bolt
 40 fastened to the float J, by means of a thread cut thereon, and the apparatus or machine may be made of brass or any other similar substance.

Having described the construction and operation of my machine, I deem a brief 45
 outline of its utility necessary; by keeping a constant supply of water in the boiler, and preventing a superabundance of water which may condense the steam, or contract
 50 the boiler iron; in a word it prevents contraction of the boiler iron, or sudden condensation or expansion of steam, and keeps the whole upon an equilibrium, and also
 55 saving fuel and the lives of those who are employed about the machinery. The chemical action which is produced by the changes of temperature of the steam is well known to the inventor.

What I claim as my invention and desire to secure by Letters Patent, are— 60

The water chambers above described and the contrivance and machinery by which their action is aided and facilitated.

SAMUEL R. CLIME.

Witnesses:

JONATHAN C. CLIME,
 JOHN CLIME.