

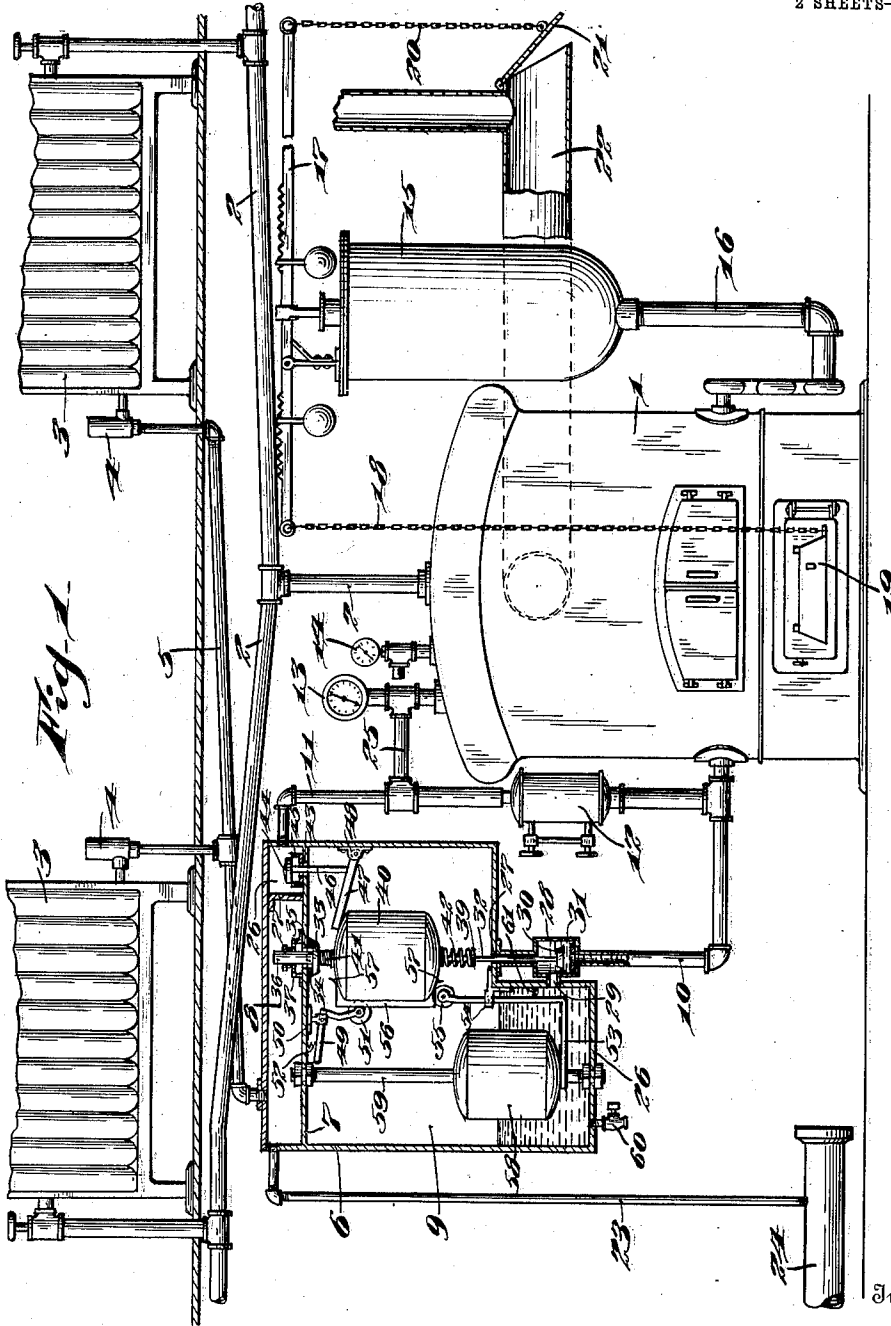
W. HOUSER.
BOILER FEEDER.

APPLICATION FILED MAY 18, 1910.

987,140.

Patented Mar. 21, 1911.

2 SHEETS—SHEET 1.



Inventor

Witnesses:
Geo. Rosenbaum.
R. H. Krenkel.

Walter Houser,

By Joshua R. A. Potts.

Attorney

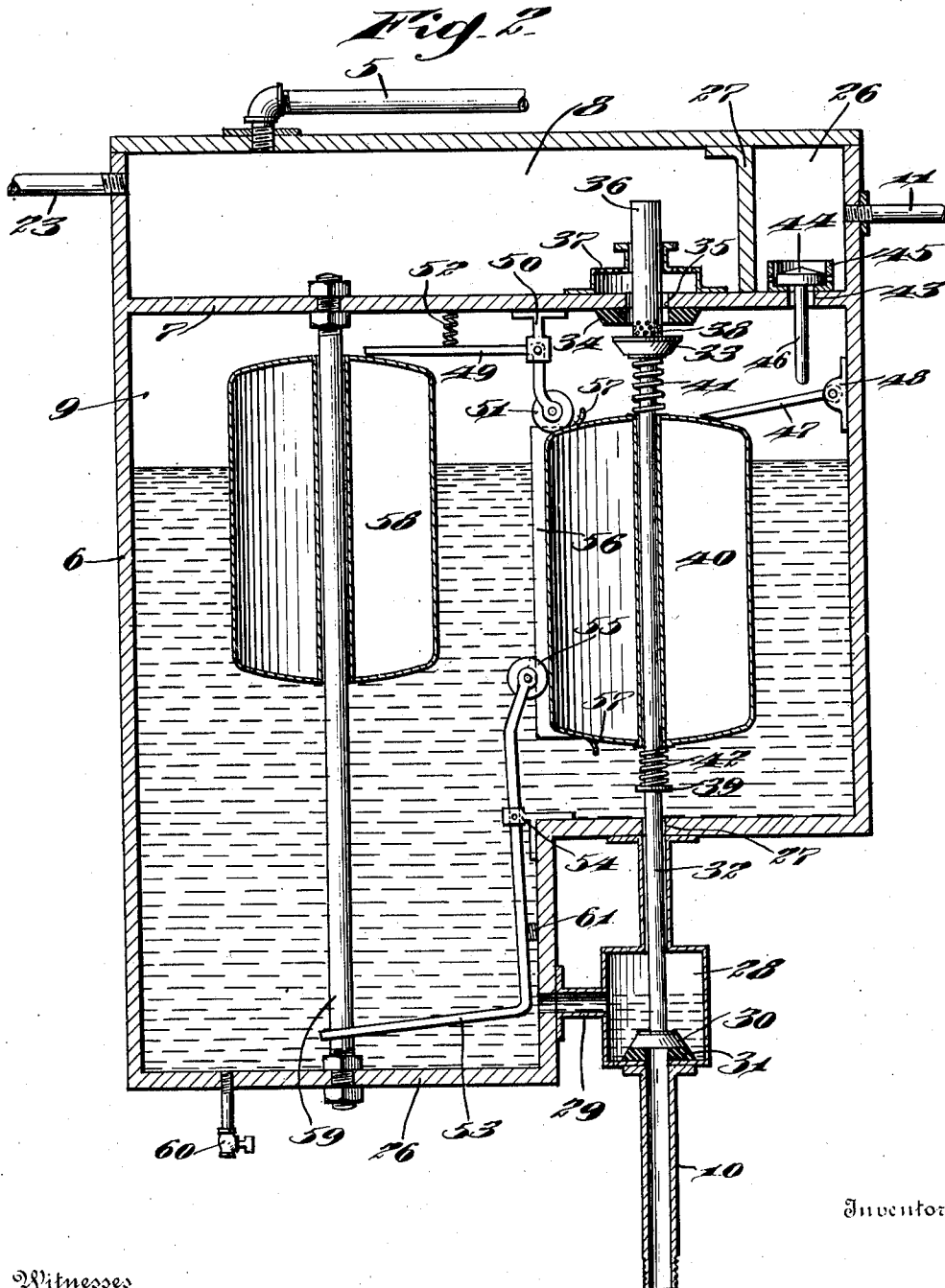
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Inventor

Witnesses

Thos. Breunann.
R. H. Krenkel.

Walter Houser,
By *Joshua R. Potts,*
Attorney

UNITED STATES PATENT OFFICE.

WALTER HOUSER, OF SUMMIT HILL, PENNSYLVANIA.

BOILER-FEEDER.

987,140.

Specification of Letters Patent. Patented Mar. 21, 1911.

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To all whom it may concern:

Be it known that I, WALTER HOUSER, a citizen of the United States, residing at Summit Hill, in the county of Carbon and State of Pennsylvania, have invented certain new and useful Improvements in Boiler-Feeders, of which the following is a specification.

My invention relates to improvements in boiler feeders, and more particularly to an improved construction of trap which is designed to collect the water of condensation from the radiators, and also cares for the impure gases, collecting the water of condensation and intermittently permitting the same to flow to the boiler and allowing the gases to pass to the sewer, thus maintaining a system of ventilation throughout the apparatus and resulting in an economy of fuel and a more satisfactory heating.

A further object is to provide an improved trap which is designed particularly for use in my heating system in connection with my improved damper controlling mechanism set forth in my application executed on even date herewith, and also in connection with my improved automatic valve for the radiators more particularly set forth in my application executed on even date herewith.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1, is a fragmentary diagrammatic view partly in elevation and partly in section illustrating my improvements in connection with my improved heating system, and Fig. 2, is an enlarged view in section of my improved trap, showing the parts in normal position.

1, represents a steam boiler furnace, and 2 steam pipes for conveying the steam to the entrance ends of radiators illustrated at 3. Each radiator is provided with an automatic valve 4, set forth in detail in my application above referred to, said valves located at the outlet ends of the radiators and communicating with a pipe 5 which connects with the upper end of the casing 6 of my improved trap. The casing 6 is divided by a horizontal partition 7 into an upper receiving chamber 8, and a lower water chamber

9. The water chamber is connected by a pipe 10 with the lower portion of the boiler of the furnace, and this pipe 10 is connected by a pipe 11 with the small chamber 26, separated from chamber 8 by a partition 27. In this pipe 11 a water gage 12 is provided and the pipe 11 serves to permit the pressure in the trap and boiler to be equalized as it is connected by a pipe 25 with the top of the boiler. A pressure gage 13 and thermometer 14 are provided on top of the furnace.

In connection with my system, I employ my improved draft regulating mechanism more fully set forth in my application above referred to, and in which a tank 15 is connected by a pipe 16, with the boiler and controls the movement of a lever 17, which is connected at one end by a chain 18 with the draft door 19 of the furnace, and at its other end by a chain 20 with the damper 21 in the smoke pipe 22, so that the pressure of steam in the boiler automatically controls the draft on the fire in the furnace to insure a uniform heat, and a uniform steam pressure, all of which will be more fully explained in the application above referred to.

The chamber 8 is connected by a pipe 23 with the sewer pipe 24, so that the impure gases which are conveyed through pipe 5 to chamber 8, will pass through pipe 23 to the sewer.

The casing 6 is provided with a bottom 26, preferably of the stepped form illustrated, and the pipe 10 communicates with an opening 27 in the higher portion of the bottom, and this pipe 10 is provided with a valve chamber 28 which is connected by a passage 29 with the lower portion of the chamber, and through which the water enters the pipe. In this chamber 28, a valve 30 is located and is adapted to close against the seat 31 in the chamber to close the passage through pipe 10. Valve 30 is secured upon a rod 32 which extends up through chamber 9 and has a valve 33 secured near its upper end and adapted to close against a seat 34 around an opening 35, through which the water in chamber 8 passes into chamber 9. The upper end of rod 32 projects into a tube 36, which is guided in a perforated cap 37 secured to partition 7, and this tube 36 is provided near its lower end with perforations 38, which permit an

entrance of air into chamber 9, so as to allow the water to freely flow from the chamber.

A collar 39 is fixed to rod 33, and a float 40 is mounted on said rod and coiled springs 41, and 42, respectively are located on the rod between the float 40 and valve 33, and between the float and the collar 39, so as to allow a sensitive cushioning movement of the float.

In partitions 7, between chamber 26 and chamber 9, a port 43 is provided which is normally closed by a valve 44, which latter is guided in a cap 45 and is provided with a stem 46, projecting down into chamber 9. This valve 44 normally closes the port 43, and the stem 46 lies in the path of movement of an arm 47 pivoted to a bracket 48 secured to the casing 6. This arm 47 lies in the path of movement of float 40, so that when the float 40 is permitted to rise, it will elevate arm 47 and open valve 44, allowing the steam from the boiler to enter chamber 9, equalize the pressure in the chamber with that of the boiler, and allow the water in the chamber to flow to the boiler, all of which will more fully hereinafter appear.

The float 40 is normally held against upward movement by means of a bell-crank-lever 49, which is pivoted to a bracket 50 depending from partition 7, the shorter end of this lever 49 is provided with a roller 51, which bears against the upper end of float 40, and is held in this position by a coiled spring 52, located between the longer end of the lever and partition 7.

53, represents a lever which is of the general angular form illustrated, pivotally supported between its ends in a bracket 54, and carrying a roller 55 at its free end, which normally bears against the side of float 40, and the movement of this roller, or rather the movement of the float with relation to the rollers 51, and 55, is guided by means of a flange 56 on the outside of the float, and stops or shoulders 57 on the ends of the float are engaged by said rollers and limit the pivotal movement of the levers. A coiled spring 61 bears against said lever 53 to press the roller end 55 against the float 40, and the opposite end of said lever 53 lies in the path of movement of a second float 58. Float 58 is guided in its vertical movement by means of a rod 59, secured at its upper end in partition 7, and at its lower end in the bottom of the casing, and this float is adapted to engage both levers 49, and 53, as will be hereinafter described.

60, represents a cock which allows the water and sediment from the casing to be drawn off at will.

The operation of my improvements is as follows: Fig. 2 shows the normal position of the several valves with the water reaching a

level in the trap, which is almost sufficient to permit it to pass from the trap to the boiler. It will be noted that the float 40 is held down in the water by means of lever 49, and float 58 is about to contact with the lever 49. When the level of water rises, float 58 will engage the long end of lever 49, swing the latter on its fulcrum, so as to move the roller 51 off the upper end of float 40. As soon as this happens, float 40 will spring upward closing valve 33 against seat 34, and elevating arm 47 so as to open valve 44. At the same time this upward movement of float 40 will lift valve 30 from its seat 31, and the spring 61 will force the rolled end 55 below the lower end of float 40, when the parts will all be in the position illustrated in Fig. 1. When valve 44 opens, steam from the boiler will enter the trap, and the pressure will be equalized in boiler and trap, so that the water in the trap will flow by gravity into the boiler. As the water descends in the trap, float 58 will descend with it, while float 40 is held elevated by means of the lever 53, until the water descends far enough for float 58 to strike lever 53 and move the lever from below float 40, when the latter will fall and lever 49 will move over to normal position. As above stated, the movements of float 40 are cushioned by means of the springs 41, and 42, and as soon as the float 40 falls, valves 30, and 44, will close, and 33 open, so that the trap will resume its normal function of accumulating the water of condensation, and permitting the odors and gases to escape to the sewer.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

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

1. In an apparatus of the character described, the combination with a casing, of valves controlling the inlet and outlet of water to and from the casing, parallel rods in said casing, a float movable on one of said rods and constructed to move said valves, and a second float movable on the other of said rods and controlling the movement of the first-mentioned float, substantially as described.

2. In an apparatus of the character described, the combination with a casing, and parallel vertical rods in said casing, of valves controlling the inlet and outlet of water to and from the casing, a float movable on one of said rods and constructed to move said valves, levers adapted to hold said float in

its operative positions, and a second float movable on the other of said rods, and adapted to operate said levers, substantially as described.

5 3. In an apparatus of the character described, the combination with a casing, and parallel vertical rods in said casing, of valves controlling the inlet and outlet of water to and from said casing, a boiler connected
10 with said casing, a float movable on one of said rods constructed to move said valves and control communication with the boiler, and a second float movable on the other of said rods controlling the movement of the
15 first-mentioned float, substantially as described.

4. In an apparatus of the character described, the combination with a boiler, of a trap, a pipe conveying water of condensation and gases to said trap, a water pipe connecting said trap and boiler, a valve in said pipe,
20 parallel rods in said trap, a float movable on one of said rods and constructed to move said valve, levers constructed to hold the float in its operative positions, and a second float movable on the other of said rods and controlling the movement of said levers, substantially as described.

5. In an apparatus of the character described, the combination with a casing, and parallel vertical rods in the casing, of valves controlling the inlet and outlet of water to and from said casing, a boiler connected with said casing, a float movable on one of said
30 rods and constructed to move said valves and control communication with the boiler, levers holding said float in its operative positions, and a second float movable on the other of said rods and controlling the movement of said levers, substantially as described.
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6. In an apparatus of the character described, the combination with a boiler, of a trap, a pipe conveying water of condensation and gases to said trap, a partition in said trap forming an inlet chamber in the top of the trap, a sewer pipe, a pipe connecting said sewer pipe with the inlet chamber, said partition having a port connecting the inlet chamber with the water chamber below, a valve normally positioned to open said port, a pipe connecting the water chamber and boiler, a valve normally closing the passage through said pipe, a float constructed to move said valves, and a second float controlling the movement of the first-mentioned float, substantially as described.
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7. In an apparatus of the character described, the combination with a boiler, of a trap, a pipe conveying water of condensation and gases to said trap, a partition in said trap forming an inlet chamber in the top of the trap, a sewer pipe, a pipe connecting said sewer pipe with the inlet chamber, said partition having a port connecting
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the inlet chamber with the water chamber below, a valve normally positioned to open said port, a pipe connecting the water chamber and boiler, a valve normally closing the passage through said pipe, a steam chamber
70 in the top of the trap, a pipe connecting said steam chamber with the boiler, a valve normally closing communication between said steam chamber and the water chamber, a float constructed to move all of said valves,
75 and a second float controlling the movement of the first-mentioned float, substantially as described.

8. In an apparatus of the character described, the combination with a boiler, of a trap, a pipe conveying water of condensation and gases to said trap, a water pipe connecting said trap and boiler, a valve in said pipe, a float constructed to move said valve, means for holding the float in its operative
85 positions, and a second float controlling the operation of the said means, substantially as described.

9. In an apparatus of the character described, the combination with a boiler, of a trap, a pipe conveying water of condensation and gases to said trap, a water pipe connecting said trap and boiler, a valve in said pipe, a float constructed to move said valve, levers constructed to hold the float in its operative positions, rollers on said levers, a guide on said float for said rollers, and a second float controlling the movement of said levers, substantially as described.
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10. In an apparatus of the character described, the combination with a boiler, of a trap, a pipe conveying water of condensation and gases to said trap, a partition in said trap forming an inlet chamber in the top of the trap, a sewer pipe, a pipe connecting said sewer pipe with the inlet chamber, said partition having a port connecting the inlet chamber with the water chamber below, a valve normally positioned to open said port, a pipe connecting the water chamber and boiler, a valve normally closing the passage through said pipe, a float constructed to move said valves, means for holding said float in its operative positions, and a second float controlling the movement of the said means, substantially as described.
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11. In an apparatus of the character described, the combination with a boiler, of a trap, a pipe conveying water of condensation and gases to said trap, a partition in said trap forming an inlet chamber in the top of the trap, a sewer pipe, a pipe connecting said sewer pipe with the inlet chamber, said partition having a port connecting the inlet chamber with the water chamber below, a valve normally positioned to open said port, a pipe connecting the water chamber and boiler, a valve normally closing the passage through said pipe, a steam chamber in the top of the trap, a pipe connecting

said steam chamber with the boiler, a valve normally closing communication between said steam chamber and the water chamber, a float constructed to move all of said valves, levers
5 holding said float in its operative positions, and a second float controlling the movement of the levers, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER HOUSER.

Witnesses:

WALLACE REMALEY,
HARRY HOUSER.