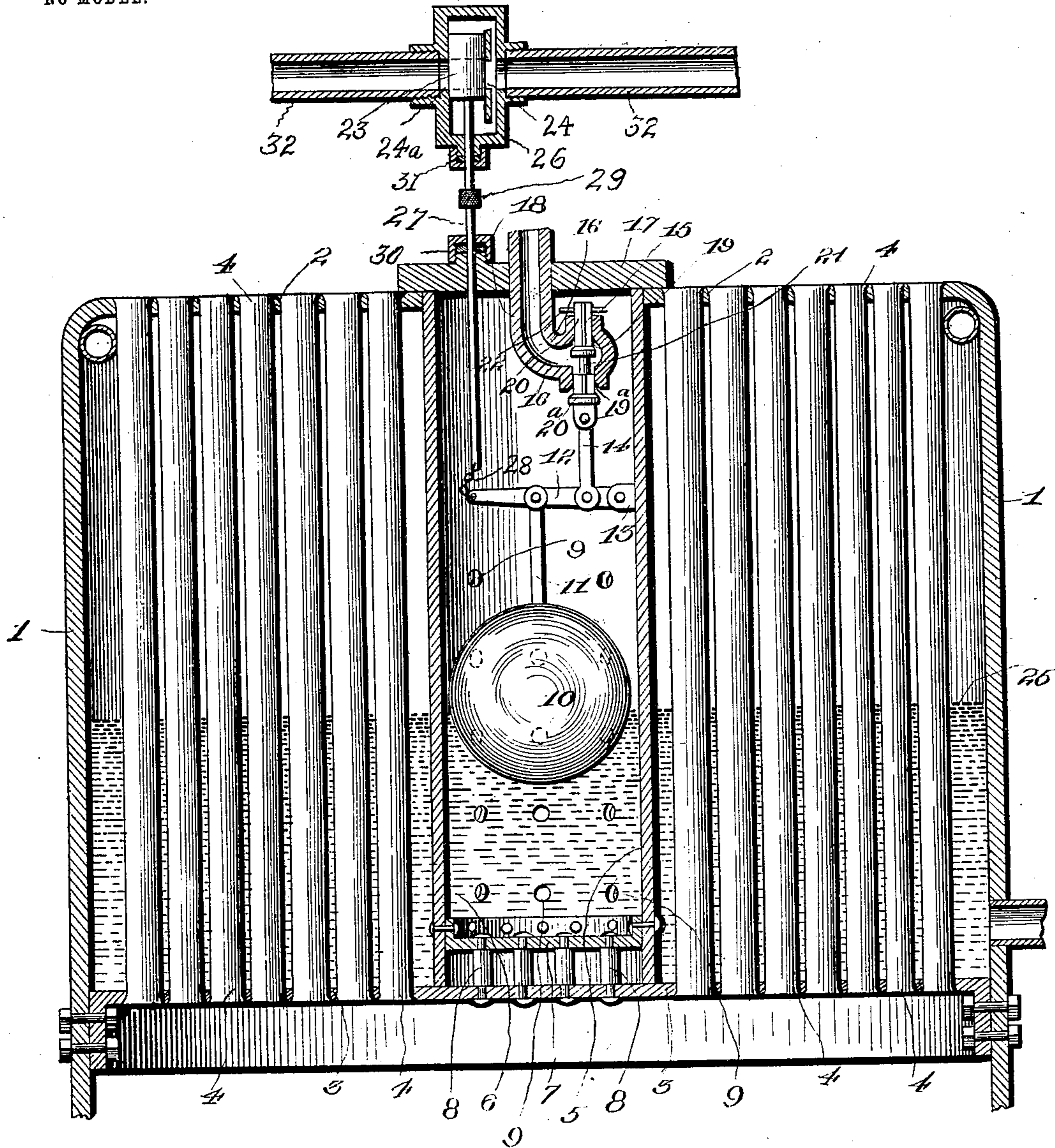


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C. L. PAGENHART.
ATTACHMENT FOR BOILERS.
APPLICATION FILED MAY 5, 1902.

NO MODEL.



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Witnesses

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ATTACHMENT FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 731,213, dated June 16, 1903.

Application filed May 5, 1902. Serial No. 105,943. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. PAGENHART, a citizen of the United States, residing at Waynesboro, in the county of Burke and State of Georgia, have invented certain new and useful Improvements in Attachments for Boilers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to an attachment for boilers; and the object is to provide means for automatically regulating the supply of water thereto and to associate with said water-regulating means mechanism by which the supply of fuel to the burner is automatically cut off. In most forms of automatic regulators of this type the mechanisms for sustaining the valves and operating the same have been located in a separate tank from the boiler especially designed for the purpose, so that when the level of the water varied by reason of the tank in which the mechanism is located being tilted or in a different plane from that of the boiler the operating mechanism is rendered inoperative; but the present invention comprises a mechanism involving a minimum number of parts so located and related as to insure an accurate and positive operation at all times.

With these and other objects in view the invention consists in providing a central chamber in the boiler, in which is located the operating parts to control the valves, and by such construction any tilting or deviation from a true horizontal position of the boiler will not affect the operation of the parts.

My device is more particularly adapted for use on boilers for automobiles, by which the boiler is often displaced from the true horizontal position by irregularities in the road-bed or by ascending or descending a hill.

The invention further consists in the construction, combination, and arrangement of parts, as will be more fully described herein-after, illustrated in the accompanying drawing, and finally pointed out in the claims.

The drawing shows a central vertical section of my device applied to a tubular boiler especially adapted for automobiles.

The fundamental principles involved in the construction and arrangement of parts are necessarily susceptible to a wide range of modification without departing from the principles of my invention or sacrificing any of the advantages thereof.

Referring to the drawing, 1 designates the outer cylindrical shell of a tubular boiler, 2 the top thereof, and 3 the base, which is riveted to the side pieces 1, as shown. The boiler is provided with a series of fire-tubes 4 and a central annular chamber 5. In this annular chamber 5 is fitted a cylindrical casing 6, having a crown-plate 7 near the bottom and connected with the base by stay-bolts 8. The crown-plate and stay-bolts strengthen or brace the bottom of the boiler around the annular chamber. The walls of the casing 6 are provided with a series of apertures 9 to permit the free circulation of water and steam into the centrally-located cylinder.

Within the casing 6 is mounted a metal float 10, having an arm 11 pivotally connected with a fulcrumed arm 12, which is pivoted to a suitable ear 13, extending from the interior of the wall of the cylinder. Pivotal connection to the fulcrum-arm is a vertical reach-bar 14, having a jointed connection with a balance-valve 15, reciprocally mounted in the valve-casing 16, supported from the head 17 by means of an extension 18, which constitutes a supply-pipe for the steam. This pipe 18 supplies steam to a feed-pump. (Not shown.)

The valve-casing is provided with two valve-seats 19 and 19^a, the former on the interior of the casing and the latter on the exterior. Each of these valve-seats is adapted to receive wing-valves 20 and 20^a, connected by a suitable stem 21, and through the wing of the upper valve 20 is a transverse pin 22 to limit the downward movement of the valve. It is deemed advisable in the practical construction to make the lower wing-valve 20^a a little larger than the upper valve, so that the weight of the fulcrumed arm, reach-bar, and float will compensate for the increased exterior pressure on the said valve 20^a. In connec-

tion with this water-regulating means I employ a safety device to automatically cut off the supply of fuel to the burner should the pump for any reason be rendered inoperative or the water in the tank become exhausted. This safety device is also operated by the centrally-located float, and consists of a balance-valve 23, having a transverse opening to register with the ports 24 and 24^a in the valve-casing 26. The valve-stem 27 is connected to the arm 12 by a flexible connection 28, which is normally slack, as shown.

The valve-stem 27 is provided with a milled collar 29, by which the balance-valve 23 is reset and suitable packings 31 and 30 are arranged on the boiler-head and the valve-casing 26.

32 designates a gasoline-supply pipe fitted in the valve-casing and connected in the usual way to a burner. (Not shown.) By the use of a balance-valve the pressure of gasoline on each end thereof is equalized when the burner is being supplied; but the weight of the float will overcome the pressure and draw the valve down when the water-level descends.

The operation of the device is as follows: The normal water-level is indicated by the dotted line 25, and when the water falls below this level the float will descend with the water and cause both valves 20 and 20^a to open, which will immediately permit the steam to enter the extension 18, which is connected with a pump or other water-feed. (Not shown.) This will supply the pump with sufficient steam to cause it to operate to deliver the water to any suitable point in the boiler, and thereby permit the water-level to again assume its normal height, which will cause the float to rise and close the balance-valve and cut off the steam-supply to the pump or other water-feed. Now should the water in the tank be exhausted or the pump for any reason be rendered inoperative the water-level will continue to fall and the float will thereupon draw the flexible connection 28 taut, pull the valve 23 down and cut off the supply of gasoline to the burner beneath the boiler. (Not shown.) By means of the flexible connection the balance-valve 23 is not affected until the water in the supply-tank is exhausted, so that the steam-supplying valve operates independently of the fuel-controlling valve. Thus it will be seen that the operation is automatic, that by locating the float in a central chamber the water will always have a direct action thereon and operate the valves, and that the tilting of the boiler, caused by irregularities in the road, will not destroy the accurate operation of the parts.

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

1. In a device of the class described, a boiler having a centrally-located chamber, and means in the chamber to automatically

maintain a uniform quantity of water in the boiler.

2. In a device of the class described, a boiler having a centrally-located chamber, and an automatically-operated valve and valve mechanism in said chamber to maintain a uniform quantity of water in the boiler.

3. In a device of the class described, a boiler having a centrally-located chamber, a valve mounted in said chamber, a float in the chamber connected to and adapted to operate the valve whereby the boiler is kept supplied with water at a uniform height.

4. In a device of the class described, a boiler having a centrally-located vertical chamber, said central chamber having a valve and a float to automatically operate said valve, whereby the tilting of the boiler does not affect the operation of the valve.

5. In an attachment for boilers, the combination with the boiler having a centrally-located vertical chamber, of a cylindrical casing mounted within said chamber and having a crown-plate and stay-bolts to brace the bottom of the boiler around said chamber and an automatically-operated float-valve mounted in the cylindrical casing to maintain a uniform quantity of water in the boiler.

6. In a device of the class described, the combination with the boiler having a cylindrical casing centrally disposed therein and provided with a plurality of apertures, of a steam-outlet pipe supported from the head and terminating in a valve-casing, a balance-valve mounted in the valve-casing, a float fulcrumed to the cylindrical casing, and a reach-bar connecting the float and valve.

7. In a device of the class described, a boiler having a centrally-located chamber, means in the chamber to maintain a uniform quantity of water, and means to automatically cut off the supply of fuel.

8. The combination of a boiler having a steam-valve and operating mechanism located in a central chamber therein, means to support and sustain said valve-operating mechanism in said central chamber, and a fuel-supply valve connected to the steam-valve-operating mechanism and adapted to be operated independently of the steam-valve.

9. In a device for controlling the supply of water to a boiler and for controlling the supply of fuel to the burner, comprising a central chamber, a steam-valve supported in the chamber, a float to operate said valve located in the central chamber, a valve in the fuel-pipe, and a flexible connection between said valve and the float, whereby the steam-valve is operated before the fuel-valve.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES L. PAGENHART.

Witnesses:

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