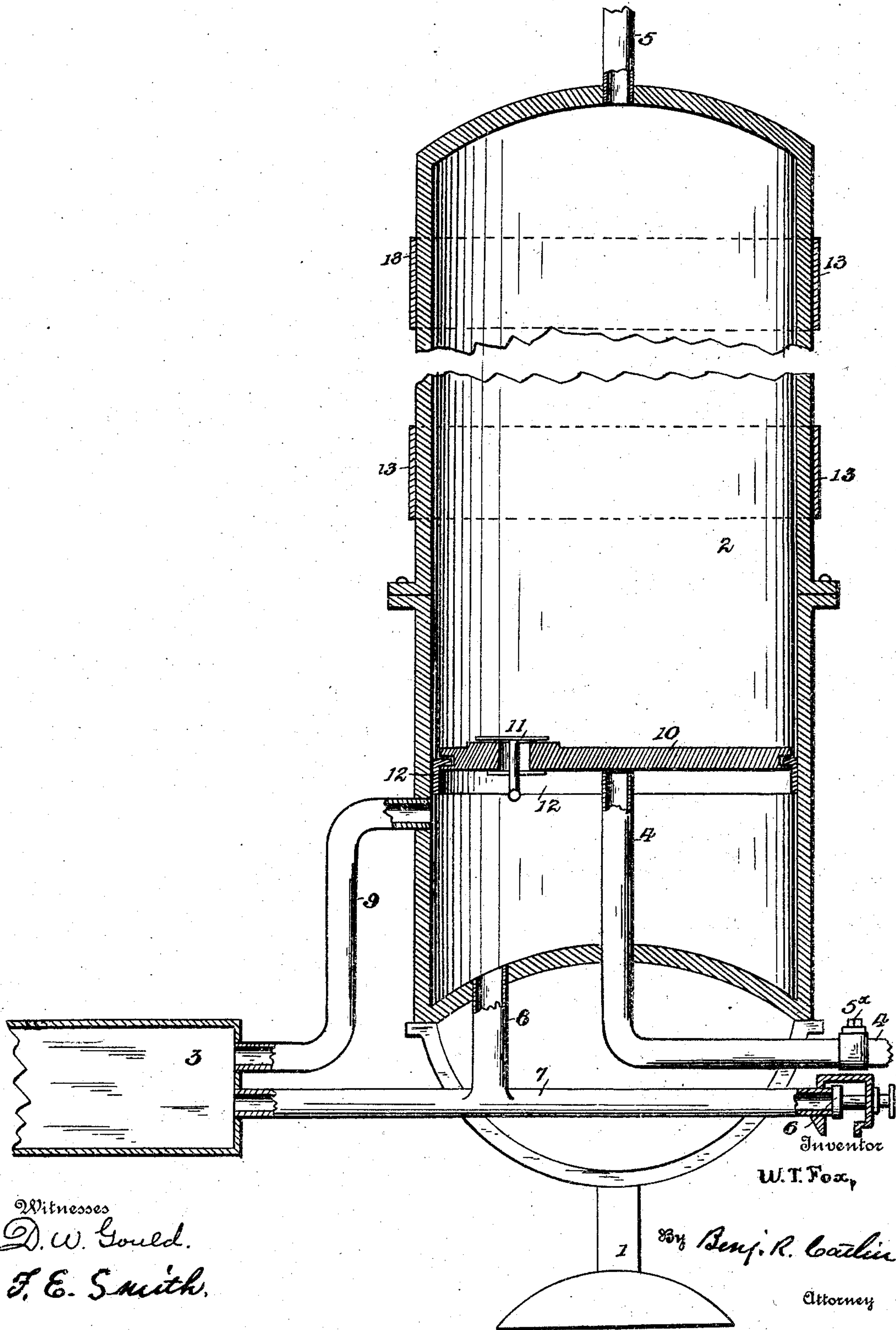


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PATENTED APR. 25, 1905.

W. T. FOX.
BOILER.

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Witnesses
D. W. Gould.
F. E. Smith.

Inventor
W. T. Fox,

By Benj. R. Catlin
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM T. FOX, OF ROCHESTER, NEW YORK.

BOILER.

SPECIFICATION forming part of Letters Patent No. 787,909, dated April 25, 1905.

Application filed April 1, 1904. Serial No. 201,079.

To all whom it may concern:

Be it known that I, WILLIAM T. FOX, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Boilers; and I do hereby 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 pertains to make and use the same.

The invention relates to so-called "stand" or "range" boilers, and has for its object to separate the hot and cold water in the boiler and to prevent their mingling when water is drawn.

The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawing, which forms a part of the specification, the figure is a vertical section of the boiler connected to a water-back or water-front and supported on a stand.

Numeral 1 denotes the stand, 2 the boiler, and 3 a water-front or water-back to be heated by a fire in a range or the like. 4 denotes a pipe for admission of cold water, and 5 a pipe for drawing off the heated water. 5^x denotes a cock. These several parts are well known and may be of the form and arrangement shown or any usual or suitable form and arrangement.

The boiler will be made in sections in some cases, and said sections will be joined in any suitable manner, as by flanges and bolts, the joint being properly ground or packed.

A draw-off or sediment cock is denoted by 6. This is adapted to open or close the draw-off pipe 7, which communicates with the water-back. Pipe 7 also communicates with the lower part of the boiler by a branch 8 to allow water to pass to the water-back.

9 indicates a pipe conveying hot water from the back to the boiler at about the level in the instance illustrated of the upper end of the cold-water-admission pipe 4.

In ordinary range-boiler when hot water is drawn and cold water admitted the latter entering under pressure mixes with the heated water with the effect to limit its quantity, or, in other terms, it reduces the temperature of much of the water being drawn. This objectionable result I obviate by a piston 10,

freely movable in the boiler and separating the heated and unheated water.

11 denotes a check-valve, preferably seated near the hot-water-admission pipe, though this location is not essential. A cup-packing, preferably made of copper, is denoted by 12. The particular form of the packing shown is not essential, neither is the valve, it being only essential that the mingling of the hot and cold water be precluded.

The check-valve illustrated in connection with the piston has a stem movable through and guided by a small perforated bar or piece secured to the under side of the piston and across the valve-opening. As shown in the present form of the improvement, the piston at its lowest situation is stopped by the admission-pipe and on a level above the hot-water-inlet pipe.

In operation while the hot water is being drawn the piston rises in the boiler, and cold water enters simultaneously through the induction-pipe and presses the piston upwardly, the check-valve remaining closed and the cold-water pressure holding the packing against the boiler-wall, thereby preventing mingling of hot and cold water above the piston. If the piston ascends to the top of the boiler and the drawing off continues, the check-valve opens, and the flow is not stopped. When the hot-water draw-off pipe is closed, the piston settles to or toward its normal situation. During this operation the valve 11 opens to allow water to pass through the piston. In the last-named operation the pressure being equal above and below the piston the cup-packing 12 does not obstruct the descent of the piston. Freshly-heated water ascends through the check-valve, and the comparatively cold water contiguous the peripheral wall of the boiler will descend around the edge of the piston, the cup 12 offering practically no resistance. In the situation represented cold water entering below the piston would fall below the hot water issuing from the water-back hot-water pipe, and water from the latter would pass up through the valved opening of the piston.

13 denotes metal bands shrunk on the boiler or otherwise applied to stiffen the same.

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

1. A boiler, pipes for drawing off heated
5 water and simultaneously admitting colder
water, means to heat the water, and means
within the boiler to continuously separate the
cold from the heated water, said means com-
prising a piston.
- 10 2. A boiler, pipes for drawing off heated
water and simultaneously admitting colder
water, means to heat the water, and means
within the boiler to continuously separate the
cold from the heated water, said means com-
15 prising a valved piston.
3. A boiler, pipes for drawing off heated
water and simultaneously admitting colder
water, means to heat the water, and means
within the boiler to continuously separate the
20 cold from the heated water, said means com-
prising a valved piston and a peripheral pack-
ing to prevent ascent of water about the piston.
4. A boiler, pipes for drawing off heated
water and simultaneously admitting colder
25 water, means to heat the water, and means
within the boiler to continuously separate the
cold from the heated water, and means com-
prising a valved piston and a peripheral pack-
ing to prevent ascent of water about the pis-
30 ton, said packing being made of metal.
5. A boiler, pipes for drawing off heated
water and simultaneously admitting colder
water, means to heat the water, and means
within the boiler to continuously separate the
35 cold from the heated water, said means com-

prising a valved piston, said valve being free
to open when the piston is stopped by the up-
per wall of the boiler.

6. A boiler, pipes for drawing off heated
water and simultaneously admitting colder 40
water, means to heat the water, and means
within the boiler to continuously separate the
cold from the heated water, said means com-
prising a valved piston, and a stop for the
piston.

7. A boiler, pipes for drawing off heated
water and simultaneously admitting colder 45
water, means to heat the water, and means
within the boiler to continuously separate the
cold from the heated water, said means com-
prising a valved piston, and a stop for the
piston consisting of the cold-water-admission
pipe.

8. A boiler, pipes for drawing off heated
water and simultaneously admitting colder 55
water, means to heat the water, and means
within the boiler to continuously separate the
cold from the heated water, said means com-
prising a valved piston and a stop for the
piston, consisting of the cold-water-admission 60
pipe, said stop being above a water-back hot-
water-admission pipe.

In testimony whereof I have signed this
specification in the presence of two subscrib-
ing witnesses.

WILLIAM T. FOX.

Witnesses:

FLORENCE L. McDOWELL,
A. E. TUCK.