

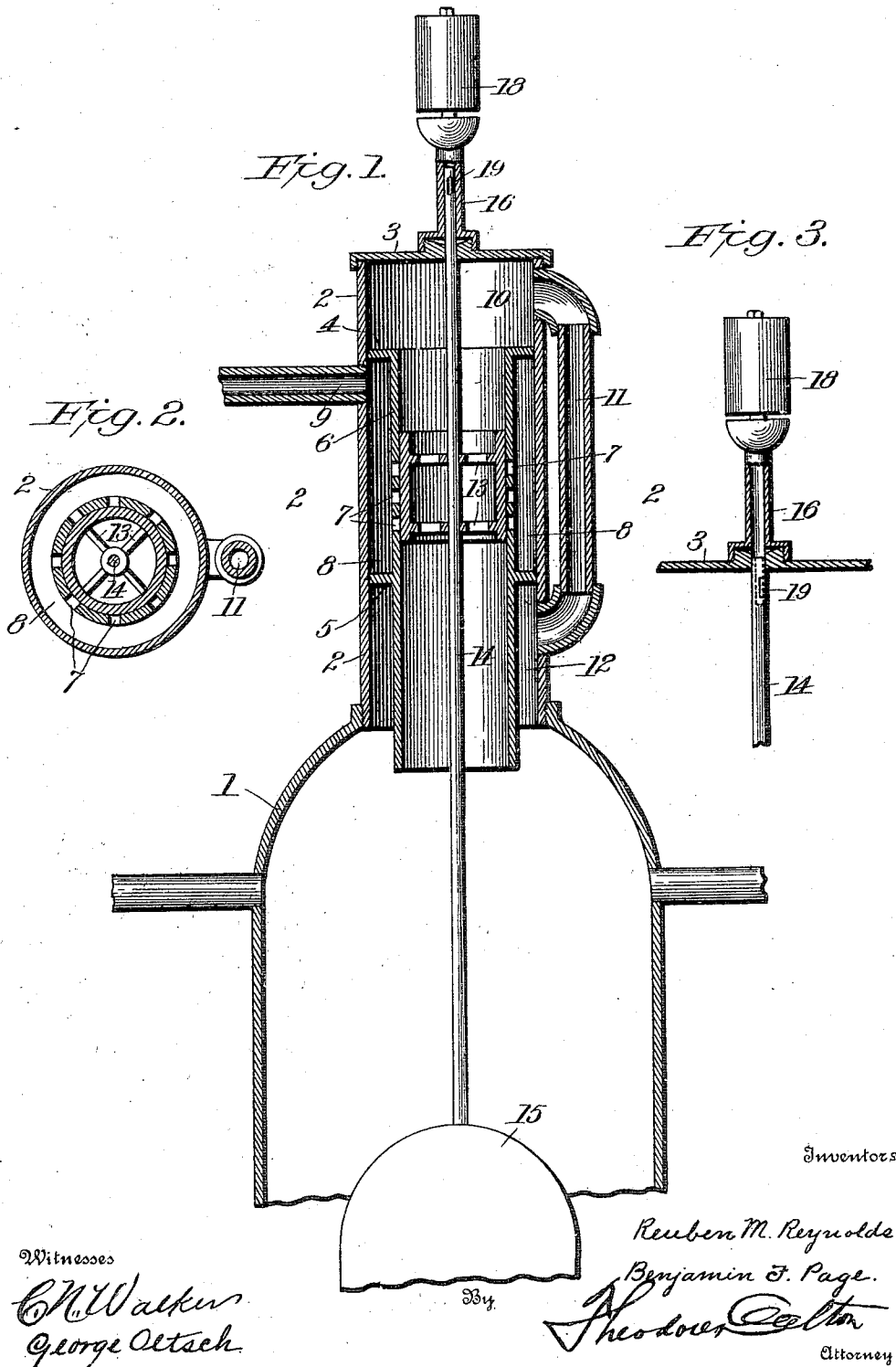
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FEED WATER CONTROLLER,

APPLICATION FILED JAN. 17, 1907. RENEWED JULY 17, 1908.

964,690.

Patented July 19, 1910.



Witnesses

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FEED-WATER CONTROLLER.

964,690.

Specification of Letters Patent.

Patented July 19, 1910.

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To all whom it may concern:

Be it known that we, REUBEN M. REYNOLDS and BENJAMIN F. PAGE, citizens of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Feed-Water Controllers, of which the following is a specification.

This invention relates to steam valves for boiler feed steam pumps.

These valves are adapted to be connected to the crown of a water column and operated by a float within the water column. This float of course provides very little power and as the valve is subject to very high pressure it has heretofore in some instances stuck. In other words, the float has been unable to overcome the steam pressure on the valve.

An object of our invention is to overcome this difficulty by providing a perfectly balanced valve of this type.

Other and further objects will appear in the following description and will be more particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a vertical section through the valve, showing the valve connected to the crown of a water column of a steam boiler. Fig. 2 is a horizontal section on the line 2—2 Fig. 1. Fig. 3 is a detail of the alarm.

Referring more particularly to the drawings, 1 indicates the upper portion of a water column of a steam boiler. Surmounting the water column is the valve casing which comprises an outer cylindrical wall 2 having its lower end adapted for attachment to and opening into the water column and its upper end closed by a cap 3. Spaced from the upper and lower ends of the outer cylinder are annular partitions 4 and 5 respectively which are connected by an open ended hollow cylindrical wall 6. This wall is provided with ports 7 and is spaced from the outer wall to provide an annular intermediate chamber 8 which is connected by outlet 9 with the boiler-feed steam-pump. A chamber 10 is provided above the valve seat and is connected by a by-pass 11 with a chamber 12 formed in the lower portion of the valve casing below the partition 5. This by-pass permits a pressure at the upper end of the valve seat equal to the pressure within the water column.

Slidable on the valve seat is an open ended

hollow cylindrical valve which is connected by spiders 13 with a valve rod 14 extending upwardly from the float 15 within the water column. The upper end of the valve rod or stem 14 is guided in a tube 16 projecting upwardly from the center of the cap 3. This tube carries at its upper end a steam whistle 18, of any suitable construction, and, when the rod is in its lowest position, a port 19 in the rod connects the chamber 10 with the steam whistle.

When the water in the water column drops the valve, which is shown in its raised position in Fig. 1, also drops, opens the ports 7 and establishes communication between the water column and the boiler feed pump. Should the valve drop to a very low position and for some reason the pump should not work, the steam whistle will operate and sound an alarm. Of course, as the water rises in the water column the valve will gradually close.

It will be noted that the valve seat projects downwardly and some distance below the ports 7 to permit the valve to have sufficient movement.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:—

1. The combination with a water column, and a float therein, of a valve casing connected to and communicating with the water column, an open ended tubular valve seat disposed in said casing and spaced therefrom, annular partitions connecting the valve seat to the valve casing, said partitions forming with the valve casing and valve seat an annular chamber, the latter having suitable outlet and inlet openings, and an open ended tubular valve having imperforate walls slidably disposed in said tubular valve seat and connected to the float, substantially as described.

2. The combination with a water column and a float therein, of a valve casing connected to and communicating with the column, an open ended tubular valve seat disposed in said casing and having its upper end spaced from the upper end of the casing and having its side walls spaced from the side walls of the casing, its lower end being extended through the lower end of the casing and into the column, an annular partition connecting the upper end of the valve seat to the side walls of the casing, and a

second annular partition connecting the side
walls of the seat to the side walls of the cas-
ing, said partitions forming with the valve
casing and valve seat an annular chamber,
5 said chamber having an outlet in its outer
wall and inlet openings in its inner wall,
an imperforate tubular valve connected to
the float and mounted to reciprocate on
said seat, and a by-pass arranged exteriorly
10 of the valve casing and communicating with

the latter beyond each end of the annular
chamber, substantially as described.

In testimony whereof we have signed our
names to this specification in the presence
of two subscribing witnesses.

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Witnesses

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