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APPARATUS FOR FEEDING WATER TO STEAM BOILERS.

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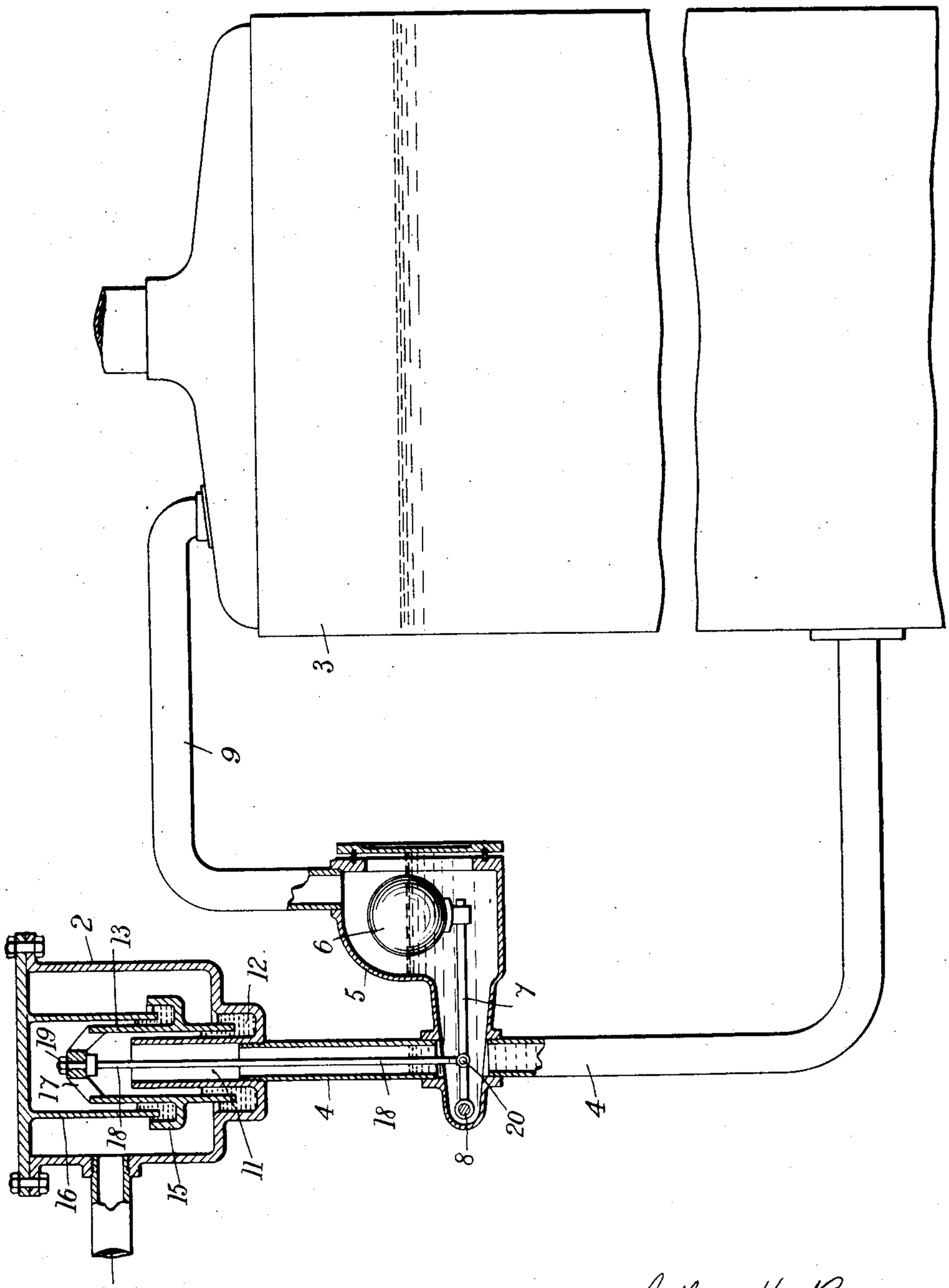
998,068. Patented July 18, 1911.



WITNESSES.
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UNITED STATES PATENT OFFICE.

ARTHUR HENRY BARKER, OF BECKENHAM, ENGLAND.

APPARATUS FOR FEEDING WATER TO STEAM-BOILERS.

998,068. Specification of Letters Patent. Patented July 18, 1911.

Application filed November 26, 1910. Serial No. 594,363.

To all whom it may concern:

Be it known that I, ARTHUR HENRY BARKER, a subject of His Majesty the King of Great Britain and Ireland, and a resident of Beckenham, in the county of Kent, England, have invented a certain new and useful Improvement in Apparatus for Feeding Water to Steam-Boilers, of which the following is a specification.

In feeding water to low pressure steam boilers from a tank at a high level it has been proposed to surround the mouth of the feed pipe by a sleeve movable in an outer jacket or chamber containing a mercury seal adapted normally to seal the lower end of said sleeve. This sleeve is suitably connected to a float operated by the water level of the boiler, so that when the float falls the sleeve is raised, breaking the seal and admitting water to the boiler. In apparatus of this kind as heretofore constructed it has been necessary to place the movable sleeve and seal either in the supply tank or at the supply tank level thus necessitating long chain or link connections to the float chamber, which are liable to be tampered with and are generally inconvenient.

The object of this invention is to provide an improved device in which the movable sleeve and seal may be placed in proximity to the boiler thus dispensing with all long connections to the feed tank level except the feed pipe.

In carrying out the invention, the feed water is led into a closed valve chamber connected to the boiler by a feed pipe. The mouth of the feed pipe projects up into the chamber and is surrounded by a movable sleeve open at both ends, the lower end however, being immersed in a permanent seal of mercury or other liquid heavier than water. A channel or trough is formed upon this movable sleeve, containing sealing liquid and the lower end of a fixed sleeve secured to the top of the chamber dips therein. The movable sleeve is connected to the float arm by a rod, so that when the float falls, said sleeve is pulled down breaking the channel or trough seal and allowing the feed water to pass up between the fixed and movable sleeves, over the top of the latter and so down the feed supply pipe to the boiler. When the float rises the movable sleeve is raised so that the fixed sleeve again dips into the channel or trough seal and the feed water supply to the boiler is cut off.

The accompanying drawing illustrates, partly in section, one suitable construction according to the invention.

The feed water is led through the pipe 1 into a closed valve chamber 2, which may be in close proximity to the boiler 3 as shown. This chamber 2 is connected to the boiler by a feed pipe 4 which passes into the float chamber 5. Arranged in this float chamber is a float 6, in the form of a ball secured upon an arm 7 pivoted at 8 to the casing of the chamber, a pipe 9 serving to connect the chamber to the steam space of the boiler 3. The closed chamber 2 is here shown as screwed upon the upper end of the feed pipe 4, said pipe being prolonged inside the chamber by the pipe 11. A sealing liquid 12 is contained in a well at the bottom of the chamber 2 surrounding the pipe 11, such liquid being heavier than water and preferably mercury. A movable open ended sleeve 13 fits over the pipe 11, the lower end thereof dipping into the sealing liquid 12, said sleeve also being provided with a trough or channel 15, containing mercury or other suitable sealing liquid heavier than water. Secured to the top of the chamber 2 is a second sleeve 16, the lower end of which dips into the sealing trough 15. The sleeve 11 is provided at the top with a spider 17 to which a rod 18 is secured by means of the nut 19. This rod 18 passes down through the feed pipe 4 and is pivoted at its lower end to the float arm 7 by a pin 20. The amount of sealing liquid 12 is sufficient to insure that the lower end of the sleeve 13 will be always sealed even if the sleeve be raised to the fullest possible extent.

The operation of the apparatus is as follows. When the water level in the boiler 3 falls, the float 6 falls and pulls the rod 4 and consequently the sleeve 13 down, breaking the seal between the fixed sleeve 16 and trough 15, thereby allowing water to flow from the inlet pipe 1, up between the sleeves 13, 16 and over the top of pipe 11 down through feed pipe 4 and so into the boiler 3. As the water level in the boiler rises the float 6 rises and the sleeve 13 returns to its former position, the lower end of the fixed sleeve 16 coming again into the sealing liquid in trough 15 and so cutting off the water supply to the boiler.

Although the sleeve 13 is here shown as operated by the rod 18 passing down the feed pipe 4, it will be obvious that other arrangements for operating said sleeve are possible without in any way departing from the spirit of the invention.

What I claim is:—

1. A feed valve comprising a closed valve chamber, a water inlet for same, a water outlet pipe, a seal of liquid heavier than water surrounding the mouth of said outlet pipe within the chamber, a movable sleeve surrounding said mouth and dipping in the seal, a second seal of liquid heavier than water upon the movable sleeve and a fixed sleeve closed at its upper end and dipping into said second seal, the said movable sleeve being adapted to be moved to break the second liquid seal only.

2. A feed valve comprising a closed valve chamber, a water inlet for same, a water outlet pipe, a seal of liquid heavier than water surrounding the mouth of said outlet pipe within the chamber, a movable sleeve surrounding said mouth and dipping in the seal, a trough upon the movable sleeve, sealing liquid heavier than water in said trough and a fixed sleeve closed at its upper end and dipping into said second seal, the said movable sleeve being adapted to be moved to break the second liquid seal only.

3. A feed valve comprising a closed valve chamber, a water inlet for same, a water outlet pipe, a mercury seal surrounding the mouth of said outlet pipe within the chamber, a movable open ended sleeve surrounding said mouth and dipping in the seal, a trough upon said movable sleeve, mercury in said trough forming a second seal and a fixed sleeve closed at its upper end and dipping into said second seal at its lower end, the said movable sleeve being adapted to be moved to break the second seal only.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ARTHUR HENRY BARKER.

Witnesses:

HERBERT D. JAMESON,

C. P. LIDDON.