March 9, 1926. 1,575,834

H. A. HURCKES

FEED WATER REGULATOR

Filed April 16, 1924 2 Sheets-Sheet 1

Fig. 1.

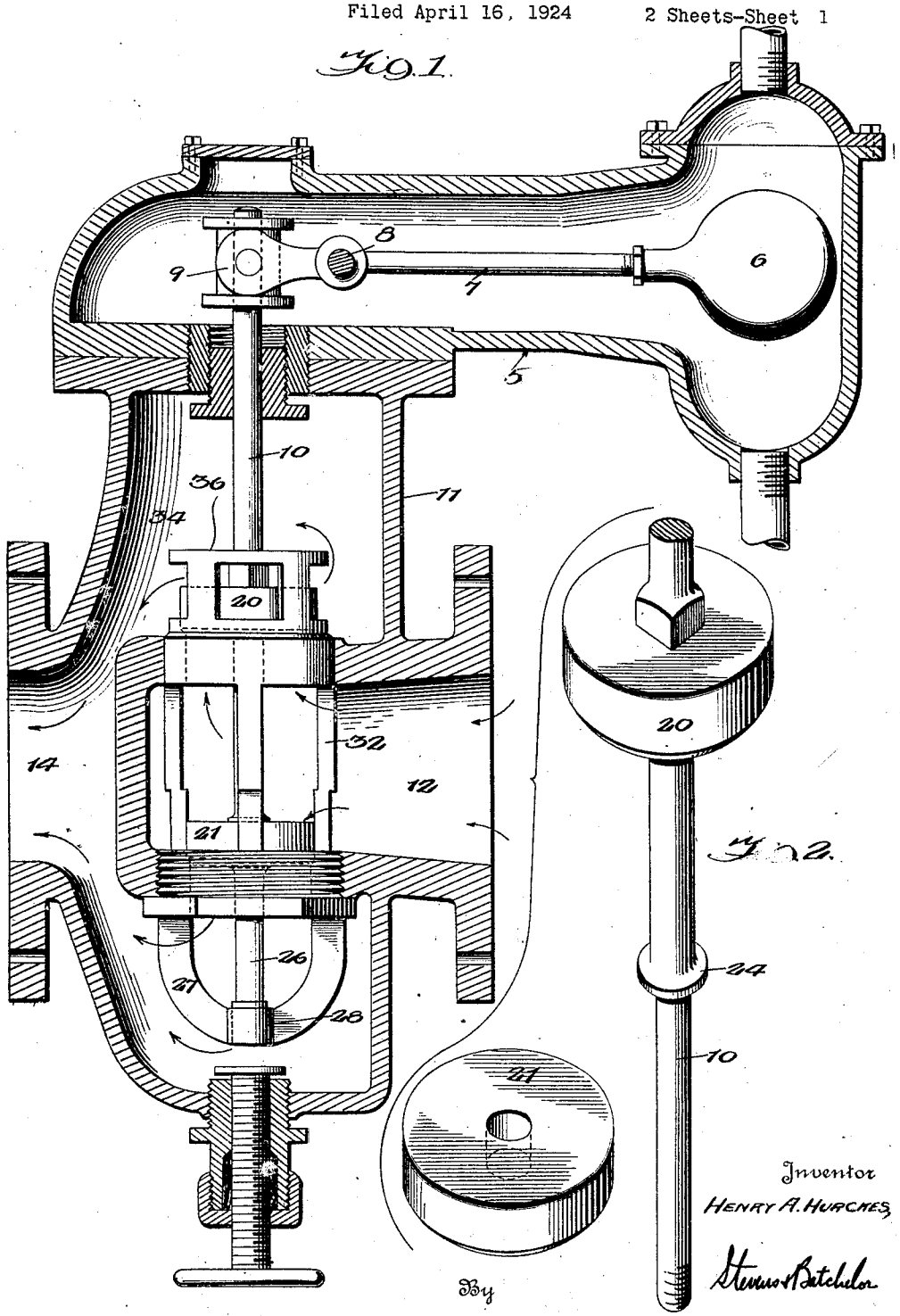


Fig 2.

Inventor
HENRY A. HURCKES
Stevens & Batchelor
Attorneys

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Fig. 3.

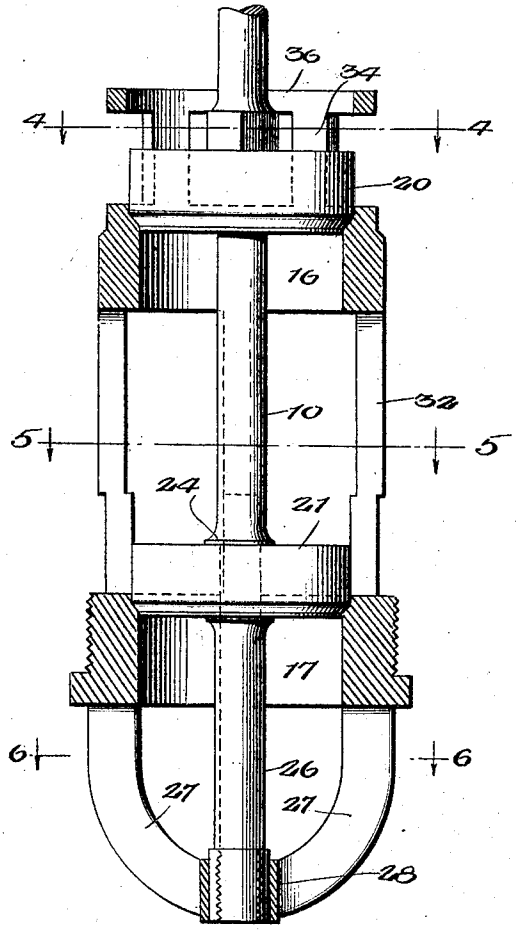


Fig. 4.

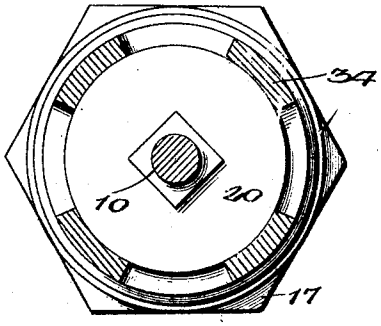


Fig. 5.

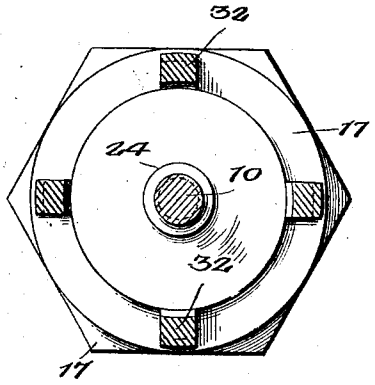


Fig. 6.

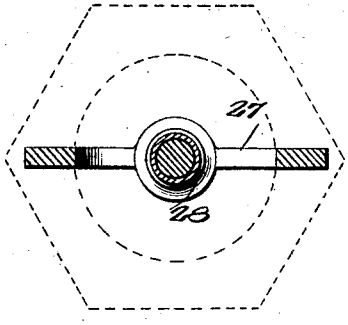
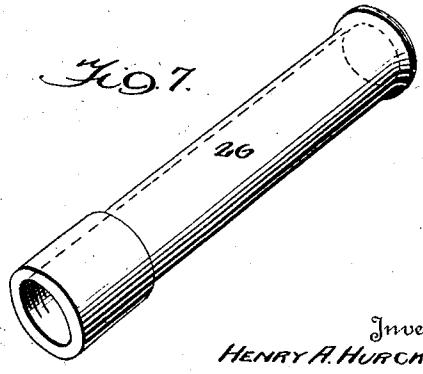


Fig. 7.



Inventor
HENRY A. HURCKES,

By Stevens & Batchelor

Attorneys

Patented Mar. 9, 1926. 1,575,834

UNITED STATES PATENT OFFICE.

HENRY A. HURCKES, OF CHICAGO, ILLINOIS.

FEED-WATER REGULATOR.

Application filed April 16, 1924. Serial No. 706,977.

To all whom it may concern:

Be it known that I, HENRY A. HURCKES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Feed-Water Regulators, of which the following is a specification.

This invention relates to feed water regulators especially adapted for use in connection with steam boilers.

Briefly stated an important object of this invention is to provide a feed water regulator wherein the upper and lower valve of the same are of the same area and are perfectly balanced to reduce rattling and binding to a minimum and to bring about firm seating of the valve.

A further and equally important object of the invention is to provide a valve of the character specified which may be easily assembled and installed and which may be economically manufactured.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout,

Figure 1 is a vertical sectional view illustrating the application of the improved valve;

Fig. 2 is a group perspective of the upper and lower valves;

Fig. 3 is a vertical sectional view through the valve;

Fig. 4 is a horizontal sectional view taken on line 4—4 of Fig. 3;

Fig. 5 is a horizontal sectional view taken on line 5—5 of Fig. 3;

Fig. 6 is a horizontal sectional view taken on line 6—6 of Fig. 3;

Fig. 7 is a perspective of a locking sleeve or groove embodied in the invention.

In the drawing wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 5 designates what might be said to be a float chamber within which a float 6 is arranged. A float arm 7 is fulcrumed at 8 within the chamber 5 and has connection as indicated at 9 with the upper portion of a valve stem 10.

In carrying out the invention the stem 10 is arranged in a casing 11 having inlet and outlet ports 12 and 14 respectively. A valve casing having upper and lower rings 16 and 17 respectively is located in the casing and the lower ring 17 is externally threaded for engagement with the lower wall of the inlet port. As clearly illustrated in Fig. 1 the upper ring 16 is externally smooth and is snugly received in an opening in the upper side wall of the port 12. Of course the inner end of the port 12 is closed and the water may enter the casing only by passing through the upper and lower rings 16 and 17 respectively.

With reference to Fig. 3 it will be observed that the upper and lower valves 20 and 21 are arranged to engage the chamfered seats of the rings 16 and 17 respectively and the valves are mounted upon the stem 10, the upper valve being rigidly and more or less permanently mounted on the stem while the lower valve 21 is confined between an annular shoulder 24 formed on the stem and the enlarged or flared upper end of a fastening tube 26.

The tube 26 has its lower end internally threaded for threaded engagement with the lower end of the stem, and the lower portion of the tube or fastening sleeve 26 is externally enlarged and is slidable in a bearing 28. A plurality of arms 27 extend downwardly and inwardly from the ring 17 and join the bearing 28 to support the same in alinement with the axis of the valve.

Fig. 6 illustrates that the arms 27 are oppositely arranged and they do not in any way interfere with the free flow of water when the movements of the float 6 operate the valve. In carrying out the invention upper and lower rings 16 and 17 are joined by spaced longitudinally extending connecting members or ties 32, the lower portions of the ties 32 being positioned to guide the valve 21 and the upper portions of the members 32 being off-set to provide for the free passage of water.

The upper valve 20 is guided in its vertical movement by a plurality of longitudinally extending guide strips or members 34 having their upper ends connected to or formed integral with an annulus 36.

To assemble the improved valve it is merely necessary to place the lower valve 21 on edge and pass the same between two of the connecting ties 32 after which the lower valve 21 is positioned on its seat. The stem is now moved downwardly through the valve

casing and through the lower valve 21 and the fastening sleeve 26 is subsequently applied to securely fasten the lower valve 21 in position.

When the sleeve 26 is threaded tightly in engagement with the under side of the lower valve 21 the valve is ready for operation and as both valves are of the same diameter the structure is well balanced and no parts of the same will rattle or bind when the valve is operated. It is important to note that the diameter of the upper portion of the stem is the same as the external diameter of the tube 26 so that the valve is balanced in this respect also.

Having thus described the invention, what is claimed is:

1. A feed and water regulator comprising upper and lower valve rings having seats, spaced parallel connecting ties joining said rings, upper and lower valves of the same diameter adapted for contacting with said seats, a stem permanently connected to the upper valve and passing through the lower valve, said stem being provided with an annular shoulder contacting with the lower valve, and a sleeve of the same diameter as said stem above said annular shoulder threaded on to the lower portion of the stem and contacting with the under side of the lower valve to hold the lower valve in position.

2. A feed and water regulator comprising upper and lower valve rings having seats, spaced parallel connecting ties joining said rings, upper and lower valves of the same diameter adapted for contacting with said seats, a stem permanently connected to the upper valve and passing through the lower valve, said stem being provided with an annular shoulder contacting with the lower valve, a sleeve threaded on to the lower portion of the stem and contacting with the under side of the lower valve to hold the lower valve in position and a plurality of arms extending downwardly from the lower valve ring and having a bearing receiving the lower portions of said sleeve for guiding the same.

3. A feed and water regulator comprising upper and lower valve rings having seats, spaced parallel connecting ties joining said rings, upper and lower valves of the same diameter adapted for contacting with said seats, a stem permanently connected to the upper valve and passing through the lower valve, said stem being provided with an annular shoulder contacting with the lower valve, a sleeve threaded on to the lower portion of the stem and contacting with the under side of the lower valve to hold the lower valve in position and a plurality of arms extending downwardly from the lower valve ring and having a bearing receiving the lower portions of said sleeve for guiding the same and a plurality of upwardly extending guide members formed on the upper ring and having an annulus connecting the same.

4. A feed and water regulator comprising upper and lower valve rings having seats, spaced parallel connecting ties joining said rings, upper and lower valves of the same diameter adapted for contacting with said seats, a stem permanently connected to the upper valve and passing through the lower valve, said stem being provided with an annular shoulder contacting with the lower valve, and a sleeve of the same diameter as the stem above said annular shoulder threaded on to the lower portion of the stem and contacting with the under side of the lower valve to hold the lower valve in position, said lower valve being insertable between said spaced ties whereby the stem may subsequently be inserted through the same.

5. A feed and water regulator comprising upper and lower valve rings having seats, spaced parallel connecting ties joining said rings, upper and lower valves of the same diameter adapted for contacting with said seats, a stem permanently connected to the upper valve and passing through the lower valve, said stem being provided with an annular shoulder contacting with the lower valve, and a sleeve threaded on to the lower portion of the stem and contacting with the under side of the lower valve to hold the lower valve in position, said lower valve being insertable between said spaced ties whereby the stem may subsequently be inserted through the same, the connecting ties for the upper and lower valve rings having their lower portions offset to serve as guides for the lower valve.

In testimony whereof I affix my signature.

HENRY A. HURCKES.