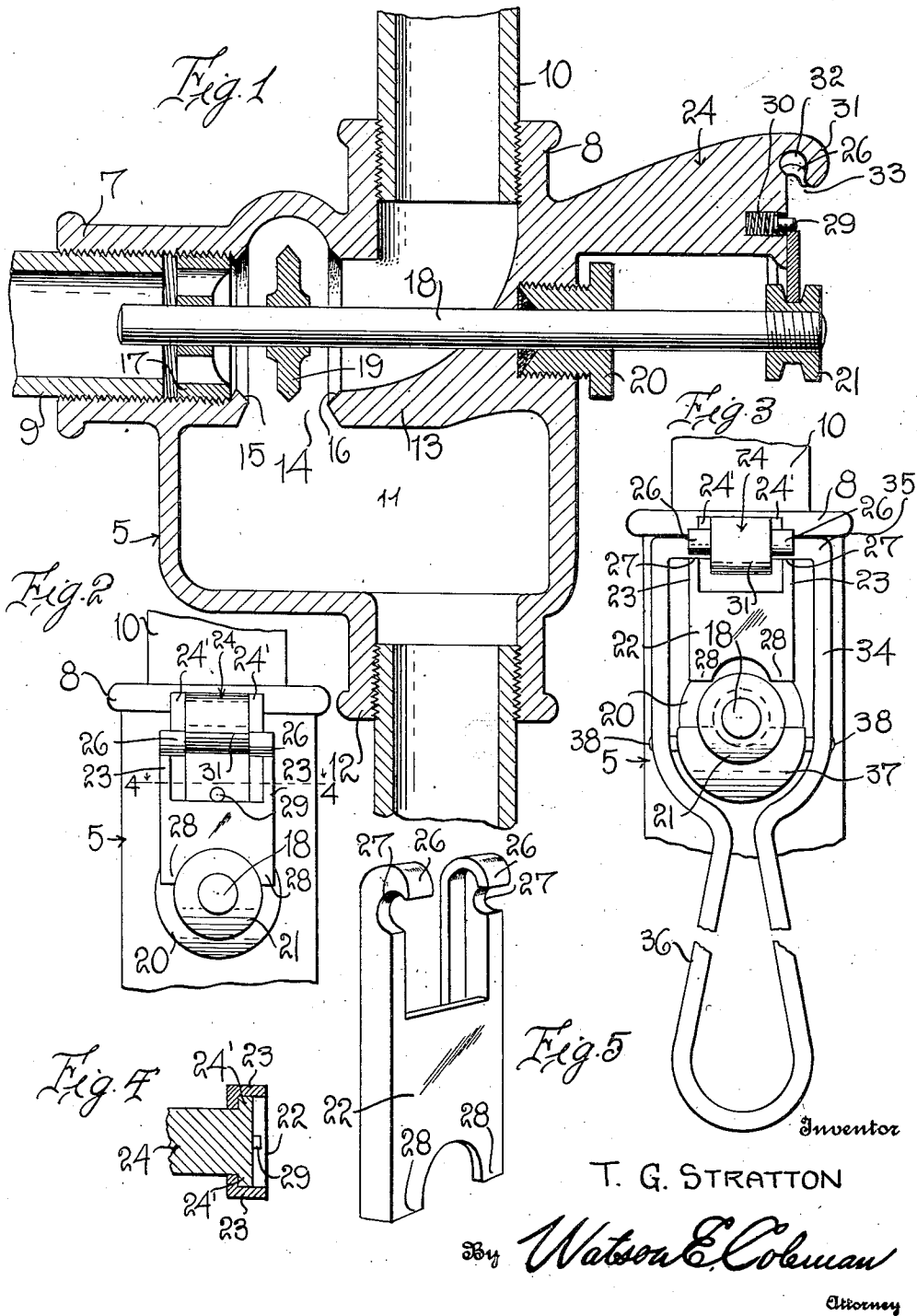


T. G. STRATTON.
WATER COLUMN CONNECTION FOR STEAM BOILERS.
APPLICATION FILED JULY 19, 1916.

1,234,955.

Patented July 31, 1917.



UNITED STATES PATENT OFFICE.

THOMAS GEORGE STRATTON, OF FALL RIVER, MASSACHUSETTS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, THOMAS G. STRATTON, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Water-Column Connections for Steam-Boilers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved water column connection for steam boilers, and has for its primary object to provide means whereby the flow of water through the water column may be reversed so as to positively clean out all sediment from the column without necessitating its removal from the boiler.

It is another object of my invention to provide a fitting connecting the lower end of the water column to the boiler, a valve mounted therein to close the pipe connection to the boiler or the lower end of the water column, and means for positively holding said valve in a neutral position to permit of the free and unobstructed circulation of water between the boiler and the water column.

It is one of the more particular objects of the invention to provide a vertically movable locking element mounted upon an arm or extension from the valve casing, means for removably mounting an operating lever upon said arm, said lever having means for operative engagement with the valve stem, and means for retaining said locking member in operative engagement with the valve stem to hold the valve in a neutral position.

It is a further general object of my invention to improve and simplify devices of the above character, whereby the same are rendered highly serviceable and convenient in practical use and capable of manufacture at relatively small cost.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which,

Figure 1 is a vertical sectional view through the water column connection, illustrating the preferred embodiment of my invention and showing the valve in a neutral position;

Fig. 2 is an end elevation;

Fig. 3 is a similar view showing the valve operating lever mounted upon the connection;

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 2; and

Fig. 5 is a detail perspective view of the vertically movable locking plate.

Referring in detail to the drawing, 5 designates the valve casing or fitting which is provided with a way 6 affording communication between the nipples 7 and 8 on the valve casing which extend at right angles to each other and are interiorly threaded for connection to the pipe 9 leading to the boiler and the lower end of the water column 10 respectively. The casing 5 is also provided below the way 6 with a chamber 11 having an interiorly threaded outlet nipple 12. The wall 13 separating the chamber 11 from the way 6 has an opening 14 therein, and annular valve seats 15 and 16 are formed on the wall of the way 6 at opposite sides of this opening.

A spider 17 is threaded in the inner end of the nipple 7 and provides a bearing or support for one end of the valve stem 18. A valve disk 19 is fixed upon this stem for movement between the seats 15 and 16. The valve stem 18 extends through a suitable stuffing box 20 in the outer side of the casing 5 and the extremity thereof is threaded to receive a peripherally grooved collar 21, the purpose of which will be presently referred to.

In the neutral position of the valve 19 as shown in Fig. 1, the nipple or extension 12 is closed by means of a suitable plug so that there will be a free and unobstructed flow or circulation of the water between and through the boiler and the water column. When it is desired to clean out the glass water column, the valve 19 is shifted to engage the same upon the seat 15, and the water will then flow from the boiler through the column 10 and the valve casing, and be discharged through the nipple 12 from which the plug has been removed. All sedimentary matter is thus carried off through the water column. The valve 19 may be shifted after a portion of the water has run off from the boiler through the water column into engagement upon the seat 16, and the flow of water will then be reversed, and the sediment in the boiler will be run off with the water through the pipe connection 9 and

chamber 11 to the outlet 12. It is thus seen that it is not necessary to remove the water column or pipe connections in order to clean out said column or the boiler. For the purpose of positively holding the valve in its neutral position, I have provided a vertically movable locking plate 22, said plate being formed on its longitudinal edges and on one face thereof with the inwardly projecting, channel-shaped flanges 23. These channel flanges receive the vertical ribs 24' formed upon an arm or extension 24 which projects laterally from the valve casing 5. It will be observed that the channel-shaped flanges 23 project for a considerable distance above the upper end of the plate 22. The flanges which engage upon the outer faces of the ribs 24' are provided upon their upper ends with the downwardly and laterally projecting hook-shaped lugs 26, and immediately below said lugs, notches or seats 27 are formed in the side faces of said flanges. The lower end of the plate 22 is in the form of a yoke, the spaced arms 28 of which are adapted for engagement upon opposite sides of the grooved collar 21 on the valve stem 18. For the purpose of retaining the locking plate 22 in operative engagement with the collar 21, a pin 29 is loosely mounted in a cylindrical socket formed in the arm 24, and a spring 30 arranged in said socket normally urges the pin outwardly to engage the end thereof over the upper edge of the plate 22, and thus prevent said plate from moving upwardly upon the guide flanges 24' and becoming disengaged from the collar 21.

The outer end of the arm 24 is formed with a downwardly projecting goose neck 31 which produces a relatively narrow entrance 33 to a substantially circular opening or channel 32. This channel receives the cylindrical end bar 35 of a lever frame 34, the other end of said frame being extended to form a suitable handle 36. It is understood, of course, that the pin 29 is forced inwardly and the plate 22 raised so that the bar 35 of the lever frame may be engaged in the channel 32. The hook bills 26 on the upper ends of the flanges 23 engage over the lever bar 35 so that the plate 22 will be supported in its raised position. A yoke bar 37 is mounted in the inner end of the rectangular lever frame, said yoke being provided upon its ends with the laterally projecting trunnions 38 which are loosely engaged for turning movement in the longitudinal bars of the frame. This yoke is adapted for engagement upon the lower side of the grooved collar 21 when the lever is arranged in its operative position upon the arm 24 as above described. By manipulating said lever, it will be readily understood that the valve stem and valve 19 may be conveniently shifted so as to engage the valve upon either of the seats 15 or 16, and when said lever is

removed after the valve has been returned to its neutral position, the plate 22 will immediately drop into locking engagement with the collar 21 and be held in such position by the pin 29.

From the foregoing description, taken in connection with the accompanying drawing, the construction, manner of operation and several advantages of my invention will be clearly and fully understood. The device is highly convenient in practical use, as it enables the boiler and water column to be quickly cleaned without removing the water column or any of the pipe fittings or connections. The several parts of the device can be very easily and quickly assembled, and in view of the very simple form of said parts, it will be apparent that the invention may be produced at comparatively small manufacturing cost. It is manifest, of course, that the valve casing, as well as the form of the valve employed, may be changed as desired or as the particular circumstances may require. The several elements employed in the device are also susceptible of considerable modification and it is, therefore, to be understood that I reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

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

1. The combination with a water column, of a boiler connection therefor including a valve casing having a way connecting the lower end of the water column with the boiler and a discharge opening communicating with said way, an axially shiftable valve mounted in said casing and operable to close communication between said casing and the way or between the casing and the boiler connection, and means to operatively engage the valve stem and hold said valve in a neutral position to permit of the circulation of water through the valve casing between the water column and the boiler.

2. The combination with a water column, of a boiler connection therefor including a valve casing having a way connecting the lower end of the water column with the boiler and a discharge opening communicating with said way, a valve mounted in said casing to open or close communication between either the water column or the boiler and said discharge opening, said valve having a stem, a peripherally grooved collar upon said stem, and a slidable yoke member mounted upon the casing for operative engagement with said collar to hold the valve in a neutral position and permit of the free circulation of water through and between the water column and the boiler.

3. The combination with a water column, of a boiler connection therefor including a

valve casing having a way connecting the lower end of the water column with the boiler and a discharge opening communicating with said way, a valve mounted in said casing to open or close communication between either the water column or the boiler and said discharge opening, said valve having a stem, a peripherally grooved collar upon said stem, a slidable yoke member mounted upon the casing for operative engagement with said collar to hold the valve in a neutral position and permit of the free circulation of water through and between the water column and the boiler, and means for locking said sliding plate in operative engagement with said collar.

4. The combination with a water column, of a boiler connection therefor including a valve casing having a way connecting the lower end of the water column with the boiler and a discharge opening communicating with said way, a valve mounted in said casing to open or close communication between either the water column or the boiler and said discharge opening, said valve having a stem, a peripherally grooved collar upon said stem, a slidable yoke member mounted upon the casing for operative engagement with said collar to hold the valve in a neutral position and permit of the free circulation of water through and between the water column and the boiler, means for locking said sliding plate in operative engagement with said collar, an operating lever, means for detachably mounting said lever upon the valve casing, said locking plate being provided with means for engagement with the lever whereby the plate is sustained in an inoperative position, and a yoke member swiveled in said lever to operatively engage the collar, whereby the valve stem may be shifted and the valve actuated.

tained in an inoperative position, and means carried by the lever to operatively engage said collar, whereby the valve stem may be shifted and the valve actuated.

5. The combination with a water column, of a boiler connection therefor including a valve casing having a way connecting the lower end of the water column with the boiler and a discharge opening communicating with said way, a valve mounted in said casing to open or close communication between either the water column or the boiler and said discharge opening, said valve having a stem, a peripherally grooved collar upon said stem, a slidable yoke member mounted upon the casing for operative engagement with said collar to hold the valve in a neutral position and permit of the free circulation of water through and between the water column and the boiler, means for locking said sliding plate in operative engagement with said collar, an operating lever, means for detachably mounting said lever upon the valve casing, said locking plate being provided with means for engagement with the lever whereby the plate is sustained in an inoperative position, and a yoke member swiveled in said lever to operatively engage the collar, whereby the valve stem may be shifted and the valve actuated.

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

THOMAS GEORGE STRATTON.

Witnesses:

STEPHEN W. MANLEY,
JOHN M. CORRIGAN.