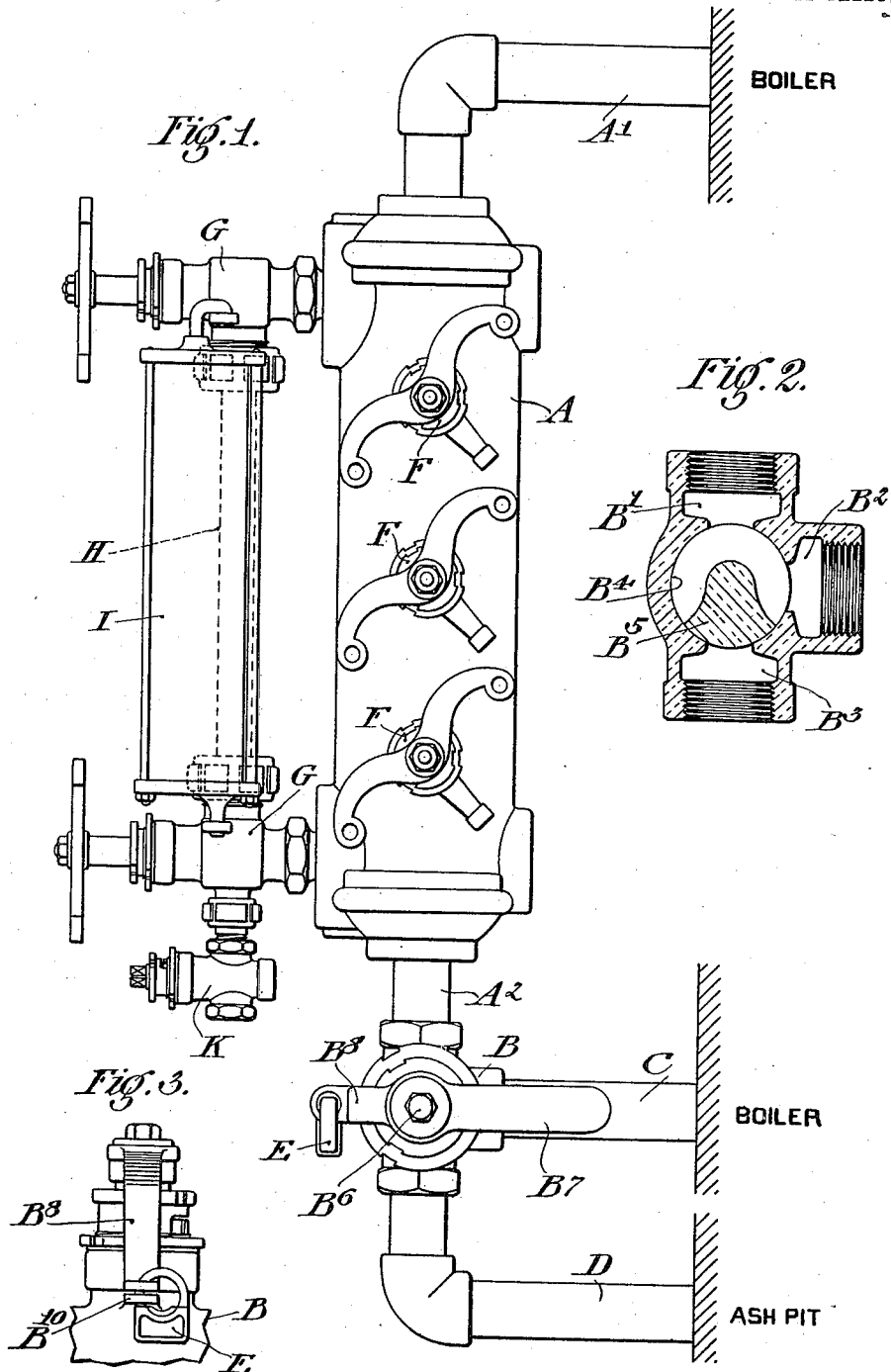


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L. J. BORDO.
BOILER WATER COLUMN.
APPLICATION FILED MAR. 15, 1910.

Patented July 11, 1911.

2 SHEETS-SHEET 1.



Witnesses:
Attest
A. Williams

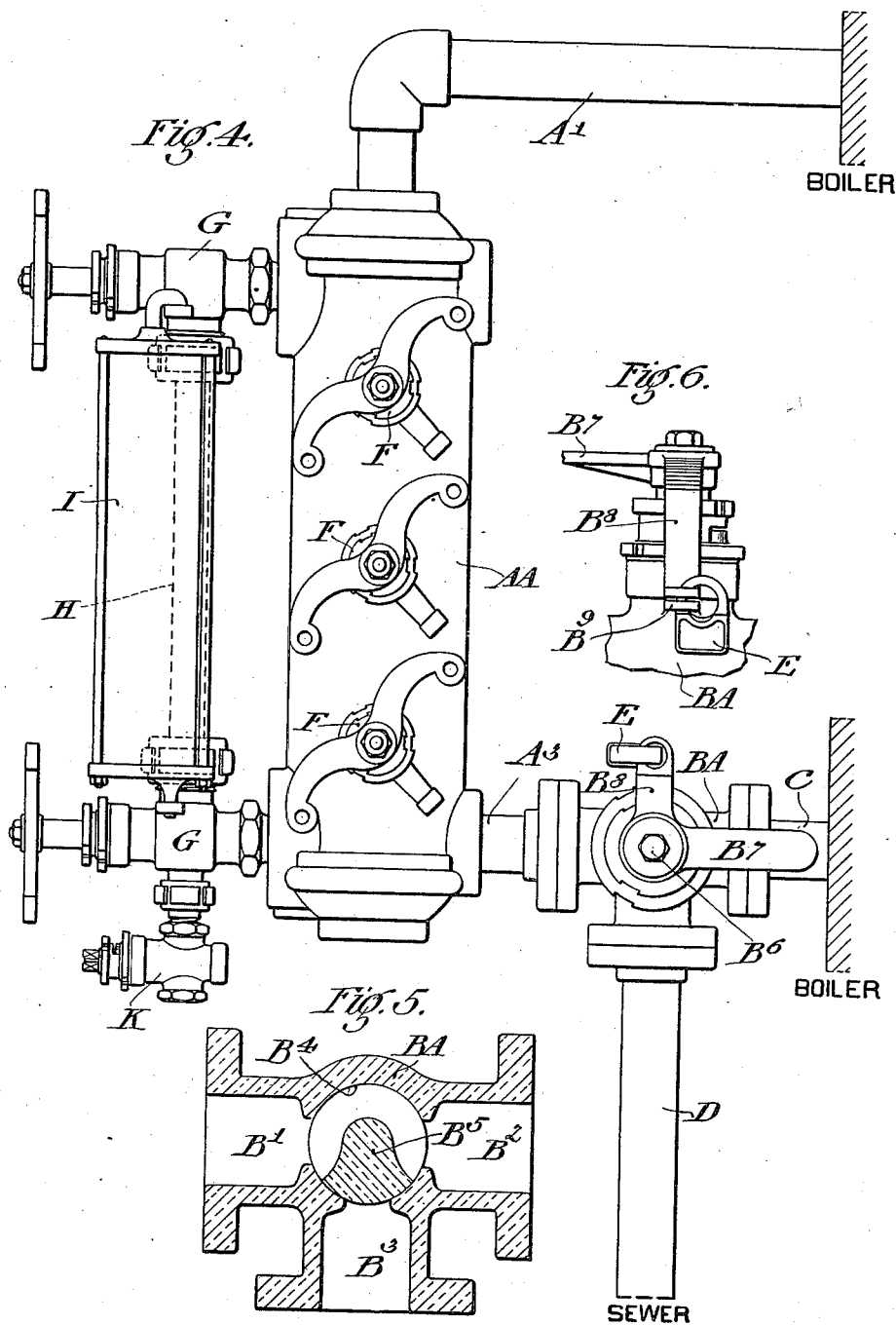
Inventor
Lambert J. Bordo
By *his* Attorney *Francis J. Chambers*

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UNITED STATES PATENT OFFICE.

LAMBERT J. BORDO, OF HILLSIDE, PENNSYLVANIA.

BOILER WATER-COLUMN.

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Specification of Letters Patent. Patented July 11, 1911.

Application filed March 15, 1910. Serial No. 549,403.

To all whom it may concern:

Be it known that I, LAMBERT J. BORDO, a citizen of the United States, residing in Hillside, in the county of Montgomery, in the State of Pennsylvania, have invented a certain new and useful Improvement in Boiler Water-Columns, of which the following is a true and exact description, reference being had to the accompanying drawing, which forms a part thereof.

My present invention relates to water columns such as are used in connection with a steam generating boiler for determining the boiler water level as by a water glass or a set of try cocks, or both, connected to each water column.

More particularly my invention relates to the connections between the water column and the boiler and the provisions for blowing the mud or other matter apt to accumulate therein out of the water column and the boiler connections thereof.

The object of the invention is the production of connections between the boiler and the water column and blow off provisions which are inherently simple in construction, relatively inexpensive to manufacture, and reliable in operation, and which permit the water column and the connections thereto to be easily and thoroughly cleaned from time to time and are inherently adapted to indicate to the boiler attendant the condition of the water column connections when the latter are out of their normal running condition in which the water column is connected at top and bottom to the boiler.

I accomplish the object of the invention by providing in the connection between the lower end of the water column and the boiler, a three way valve formed with three ports, one connected to the boiler end of the water column, one to the boiler, and one with a waste connection, and having a valve proper adapted to close communication between any one of the ports and the other two ports, depending on the position of the valve proper, while, at the same time, establishing communication between said other two ports. In consequence of this arrangement, when the waste port is closed as in normal operation the lower end of the

water column is in free communication with the boiler through the valve ports connected to the water column and the boiler, and when either of the latter ports is closed by the valve proper, thereby preventing communication between the lower end of the water column and the boiler, the other of said two ports is connected to waste. The discharge then taking place through the waste connection under the boiler pressure indicates, either audibly, or visually, or in both ways, to the boiler attendant, that the water column is not connected at its lower end to the boiler in its normal operating condition.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention however, and the advantages possessed by it, reference may be had to the accompanying drawings and descriptive matter in which I have illustrated and described forms in which the invention may be embodied.

Of the drawings, Figure 1 is a side elevation of one form of apparatus embodying my invention. Fig. 2 is a sectional elevation of the three way valve employed in Fig. 1. Fig. 3 is an end elevation of a portion of the apparatus shown in Fig. 1. Fig. 4 is a view similar to Fig. 1 showing a slightly modified form of the invention, and Figs. 5 and 6 bear the same relation to Fig. 4 that Figs. 2 and 3 respectively bear to Fig. 1.

In the drawings, and referring first to Figs. 1, 2 and 3, A represents the body of the water column, A' the pipe connection leading from its upper end to the boiler and A² a pipe connection leading from its lower end to a three way valve B. The latter is formed with a chamber B' to which pipe A² is connected, a chamber B² connected by pipe C to the boiler at a level below that at which pipe A' is connected, and a chamber B³ to which the waste pipe D is connected. In Fig. 1 the waste pipe D runs to the ash pit of the boiler furnace. The chambers B', B² and B³ each open to a valve chamber B⁴, circular in cross section and containing a valve plug or body B⁵

adapted to close communication between chamber B⁴ and any one of the chambers B', B² and B³ at a time depending on the position of the valve body and at the same time leaving the other two of the chambers B', B² and B³ in communication with each other through chamber B⁴. B⁷ represents an operating handle and B⁸ a locking arm each secured to the spindle of the valve body. E represents a lock for securing arm B⁸ to the lug projecting from the casing of the valve B with the valve body B⁵ in the normal operating position in which pipes A² and C are in communication. The water column body A is shown as provided with the usual try cocks F and valve connections G to the water glass H. I represents a guard and K a blow off cock for the water glass.

The construction shown by Figs. 4, 5 and 6 differs from that shown in Figs. 1, 2 and 3 only in the fact that the lower pipe connection A² leads from the side instead of the body of the column body A A; in the configuration of the casing of valve BA corresponding to valve B of the first construction and in the fact that the waste pipe D is indicated as running direct to a sewer connection instead of to the furnace ashpit.

In normal operation the three way valve is in the position shown in Figs. 2 and 5 in which the waste pipe D is cut off and the valve chambers B' and B' are in communication with each other through chamber B⁴.

In this condition of the apparatus the water column body A or AA is connected at top and bottom to the boiler. When it is desired to blow out the water column and lower pipe A² or A³ the valve body B⁵ is shifted to close communication between chambers B² and B⁴. This closes pipe C and permits the water column to blow out through pipe A² or A³, valve B or BA and waste pipe D. Similarly, when it is desired to blow out the lower boiler connection C, valve body B⁵ is shifted to close communication between chambers B' and B⁴ and open communication between chambers B² and B³ through chamber B⁴. With the constructions illustrated it will be observed that the connection between the boiler through pipe C and the lower end of water column body A or AA, cannot be interrupted except by connection of the boiler to the waste pipe D either through the water column proper or through the pipe C. This in itself forms a safety provision of great value. Moreover when the valve B or BA is out of its normal operating position that fact is clearly indicated by the discharge taking place then through pipe D. This discharge forms an effective indication of the condition of the valve which is particularly noticeable both visually and audibly when

the discharge is into the ashpit of the boiler furnace as indicated in Fig. 1.

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

1. The combination with the boiler of a water column body connected at its upper end to the boiler, and a three way valve comprising a casing and having a port connected to the lower end of said body, a second port connected to the boiler, and a third port with a waste connection thereto, and a valve proper adapted to cut off communication between any one of said ports and the other two ports while simultaneously opening communication between said other two ports.

2. The combination, with the boiler, of a water column body connected at its upper end to the boiler, and a three way valve comprising a casing having a valve chamber and three ports opening into said chamber and connected, one to the lower end of said body, a second one to the boiler, and a third one to waste, and a valve proper located in said valve chamber, said valve proper being so shaped, and the valve chamber and ports so arranged and disposed, that the valve proper may be moved to cut off communication between any one of said ports and said chamber as desired, but cannot be moved to simultaneously close communication between any two of said ports and said chamber.

3. The combination, with the boiler, and the furnace ash pit therefor, of a water column body connected at its upper end to the boiler, and a three way valve comprising a casing having a port connected to the lower end of said body, a second port connected to the boiler, and a third port, a valve proper adapted to cut off communication between any one of said ports while simultaneously opening communication between said other two ports and a waste connection running from said third port to the furnace ash pit.

4. The combination, with a boiler, of a water column body connected at its upper end to the boiler, a three-way valve comprising a casing having a port connected to the lower end of said body, a second port connected to the boiler, and a third port with a waste connection thereto, a valve proper adapted to cut off communication between any one of said ports and the other two ports, while simultaneously opening communication between said other two ports, and provisions for locking the valve against an unauthorized adjustment out of the position in which the first mentioned port and said second port are in communication.

5. The combination, with a boiler, of a

water column, pipe connections between the boiler and said column at the top and bottom of the latter, a valve in the pipe connection between the bottom of the column
5 and the boiler, movable to close communication through said pipe connection between the boiler and the column, and provisions for locking the valve against an unauthorized adjustment out of a normal position in which the column and boiler are in communication through the lower pipe connection. 10

LAMBERT J. BORDO.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
