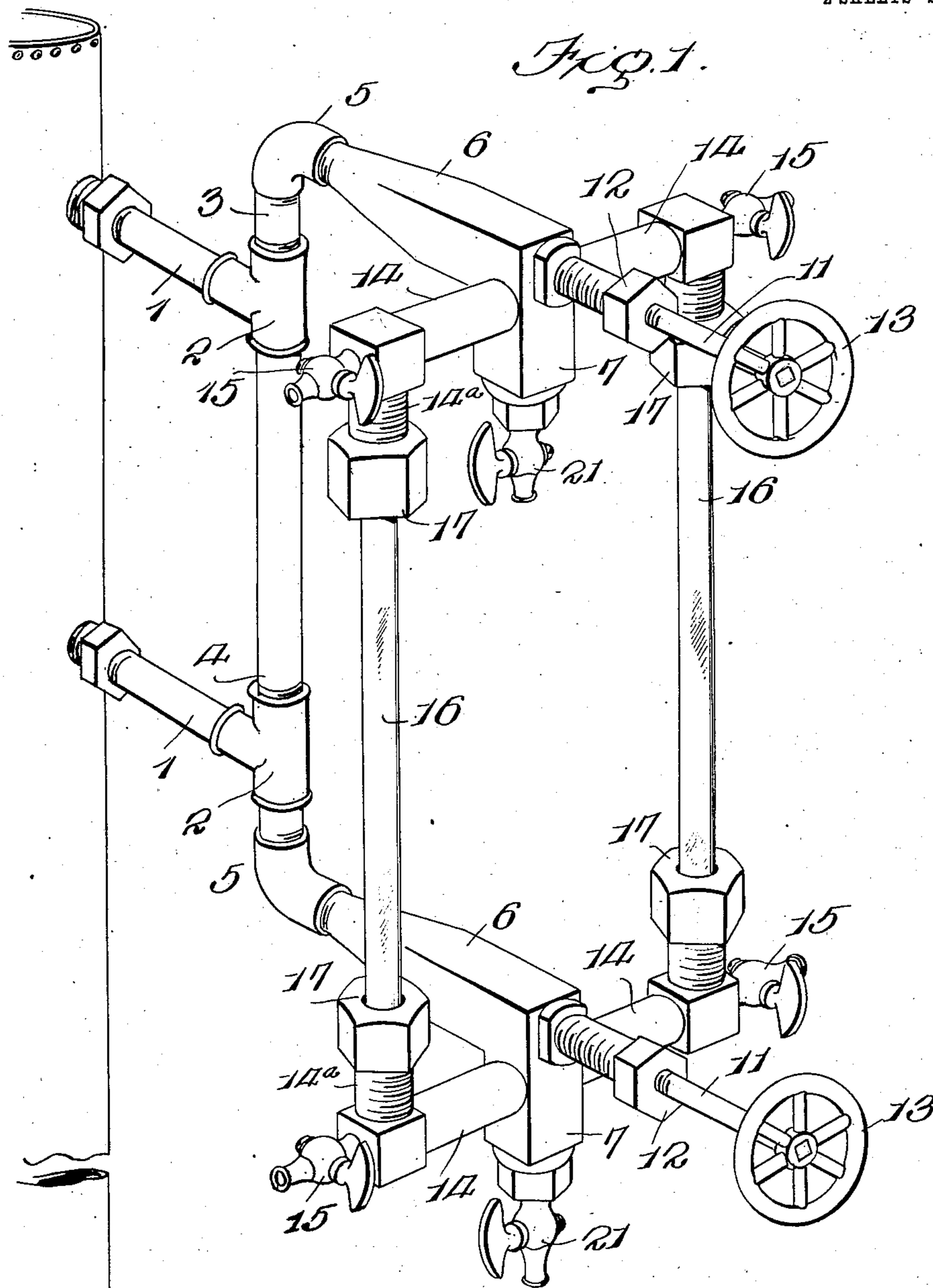


H. C. BURNS.
WATER GAGE.
APPLICATION FILED MAR. 13, 1909.

946,106.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1.



Witnesses

W. M. M. M.

W. A. Woodson

Inventor

H. C. Burns

By

W. A. M. M., Attorneys.

H. C. BURNS.

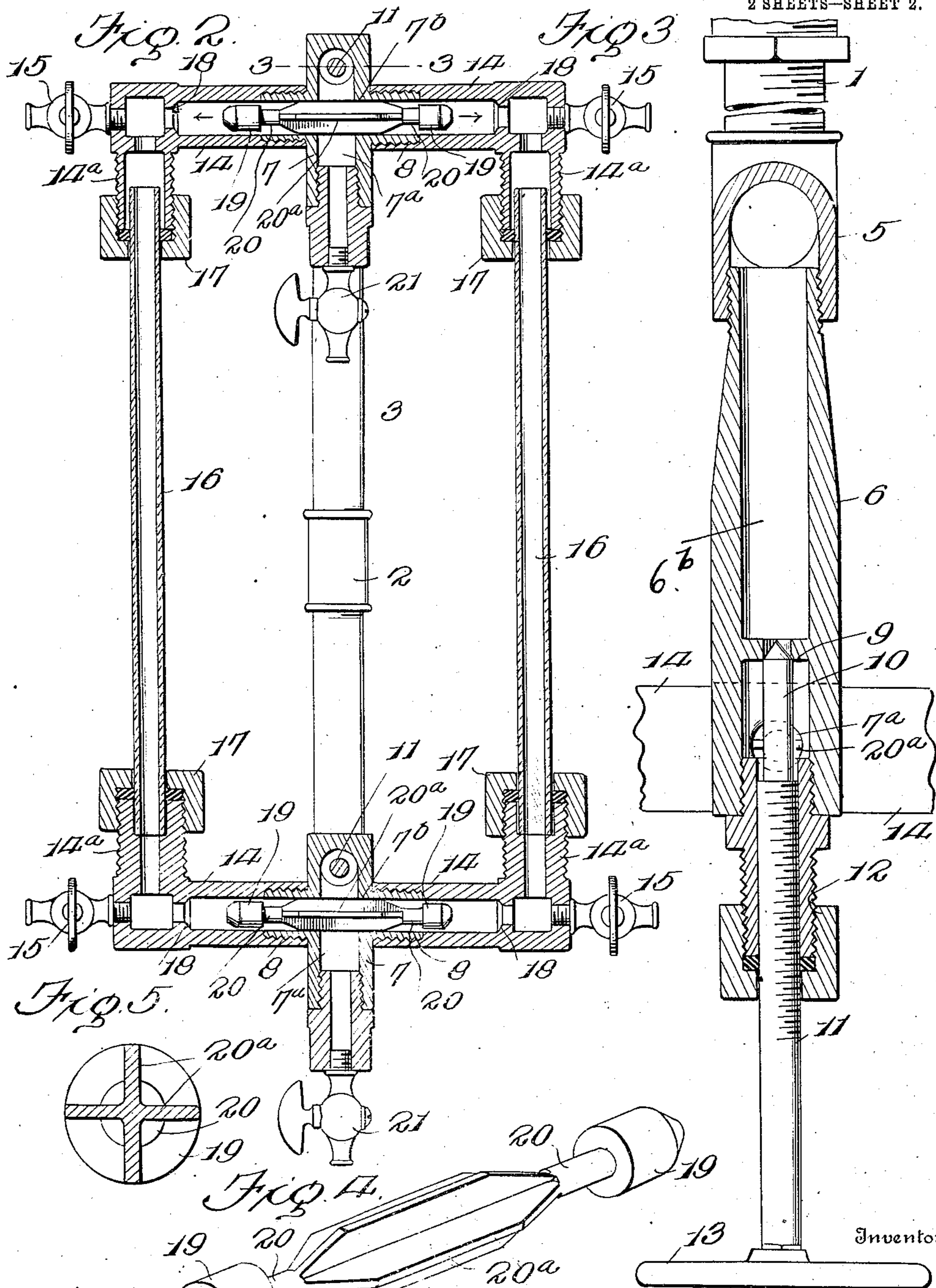
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H. C. Burns
Tharkey, Attorneys,

UNITED STATES PATENT OFFICE.

HENRY C. BURNS, OF MARSHALL, MICHIGAN.

WATER-GAGE.

946,106.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed March 13, 1909. Serial No. 483,207.

To all whom it may concern:

Be it known that I, HENRY C. BURNS, a citizen of the United States, residing at Marshall, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Water-Gages, of which the following is a specification.

The present invention relates to certain new and useful improvements in the construction of water gages such as are commonly employed in connection with steam boilers, and the object of the invention is the provision of a gage of this character formed with a pair of independent gage tubes and embodying a novel valve mechanism whereby as soon as either of the gage tubes is broken the supply of steam and water is automatically shut off therefrom, the uninjured gage tube serving to indicate the level of the water within the boiler while the broken gage tube is being replaced.

The invention further contemplates a water gage which can be readily applied to an ordinary steam boiler, which is inexpensive in its construction, and which is positive and reliable in its operation.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a water gage constructed in accordance with the invention; Fig. 2 is a vertical sectional view through the same; Fig. 3 is an enlarged horizontal sectional view on the line 3—3 of Fig. 2, portions being broken away; Fig. 4 is an enlarged detached perspective view of a pair of the check valves and the stem connecting the same; Fig. 5 is a transverse sectional view through the stem connecting the check valves.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Specifically describing the present embodiment of the invention, the numeral 1 designates a pipe one end of which is secured to the boiler and communicates with the interior thereof, while the opposite end of the pipe is provided with a T-coupling 2 to which is connected an upwardly extending pipe 3 and a downwardly extending

pipe 4, the said pipes terminating in the elbows or 2-way connections 5. Threaded in these elbows 5 are the laterally extending arms 6 which are arranged one above the other and are formed at their outer ends with the downwardly extending heads 7. Each of these heads is formed with a longitudinal bore 7^a communicating at its upper end with the interior of the corresponding lateral arm 6, and also with the transversely disposed bore 6^b which intersects the longitudinal bore, the ends of the transverse bore being surrounded by the exteriorly threaded bosses.

A valve seat 9 is formed in each of the lateral arms 6 at an intermediate point in the length thereof, and valves 10 are provided for coöperation with these valve seats to shut off the flow of steam and water through the arms. These valves 10 are formed in connection with valve stems 11 which are threaded in packing boxes 12 applied to the ends of the lateral arms 6. The usual handle 13 is applied to the extremity of each of the valve stems 11 and constitutes a means for manually closing the valves 10 to shut off all communication between the heads 7 and the boiler should the latter be found desirable.

Threaded upon each of the bosses 8 is a branch 14 which is provided at its outer end with a laterally projecting arm 14^a and also with a pet cock or blow off valve 15. The branches 14 upon the heads 7 project in corresponding directions and the ends of the corresponding branches are connected by the glass gage tubes 16, the extremities of the said gage tubes being received within packing nuts 17 which are threaded upon the arms 14^a. Both of the gage tubes 16 are normally in communication with the boiler so as to indicate the level of the water therein, and any scale or sediment which may at any time accumulate within the branches 14 can be readily withdrawn by temporarily opening the blow off valves 15. Each of the branches 14 is formed at an intermediate point in the length thereof with a valve seat 18 and a check valve 19 is provided for coöperation with each of the valve seats. The two check valves of each of the heads 7 are connected by a valve stem 20 so as to move in unison, and these valve stems pass through the transversely disposed bores 7^b of the head and are provided with the longitudinally disposed vanes 20^a. The lower end

of the longitudinally disposed bore 7^a of each of the heads 7 has a blow off valve 21 applied thereto by means of which any scale or sediment accumulating within the head can be readily withdrawn. Attention is also directed to the fact that when either of these blow off valves 21 is opened the escaping steam and water has a tendency to act upon the longitudinal vanes 20^a of the valve stem and to rotate the check valves 19 about a longitudinal axis. This rotation of the check valves tends to prevent the accumulation of scale thereon and also prevents them from sticking upon their seats.

In the operation of the device should either of the gage tubes 16 be broken the water and steam escaping will tend to close the corresponding check valves 19 and to shut off communication between the broken gage tube and the boiler. The uninjured gage tube will then serve to indicate the level of the water within the boiler while the broken gage tube is being replaced by a new tube.

Having thus described the invention, what is claimed as new is:

1. In a water gage for steam boilers and the like, the combination of a pair of heads in communication with the boiler, a blow off valve for each of the heads, corresponding branches projecting from the heads, gage tubes fitted between the corresponding branches of the heads, a check valve arranged within each of the branches for shutting off communication between the heads and either of the gage tubes should the said gage tube become broken, and a stem connecting the check valves of the branches projecting from each of the heads, the said stem being constructed to cause a rotary movement of the check valves about their axes when the blow off valve is open.

2. In a water gage for steam boilers and the like, the combination of a pair of heads in communication with the boiler, a blow off valve for each of the heads, corresponding branches projecting from the heads and formed with valve seats, gage tubes between the corresponding branches of the heads, check valves adapted to coöperate with the valve seats of the branches to shut off communication between the heads and the gage tubes should either of the gage tubes be

broken, and a valve stem connecting the check valves of the branches of each of the heads, the said valve stems extending through the heads and being formed with longitudinal vanes which are adapted to be acted upon by the escaping steam and water when the blow off valve is open to cause a rotary movement of the check valves.

3. In a water gage for steam boilers and the like, the combination of a pair of heads in communication with the boiler, a blow off valve for each of the heads, corresponding branches projecting from the heads, a gage tube fitted between the branches, a check valve within each of the branches, the said check valves operating automatically to cut off communication between the heads and the gage tube should the gage tube be broken, and means for causing the check valves to be rotated about their axes when the blow off valves are open.

4. In a water gage for steam boilers and the like, the combination of a pair of heads, pipes leading to the heads and in communication with the boiler, a manually controlled valve for each of the pipes, a blow off valve for each of the heads, corresponding branches projecting from the heads and formed with valve seats, blow off valves for the branches, gage tubes fitted between the corresponding branches, a check valve arranged within each of the branches for co-operation with the valve seat thereof, the said check valves operating automatically to shut off communication between the heads and either of the gage tubes should either of the gage tubes be broken, and a stem connecting the check valves in the branches projecting from each of the heads to cause the said check valves to operate in unison, the said stem passing through the head and being formed with vanes adapted to be acted upon by the escaping steam and water when the blow off valve in the head is opened to rotate the check valves about their longitudinal axes.

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

HENRY C. BURNS. [L.S.]

Witnesses:

WM. A. LANE,
L. S. PAGE.