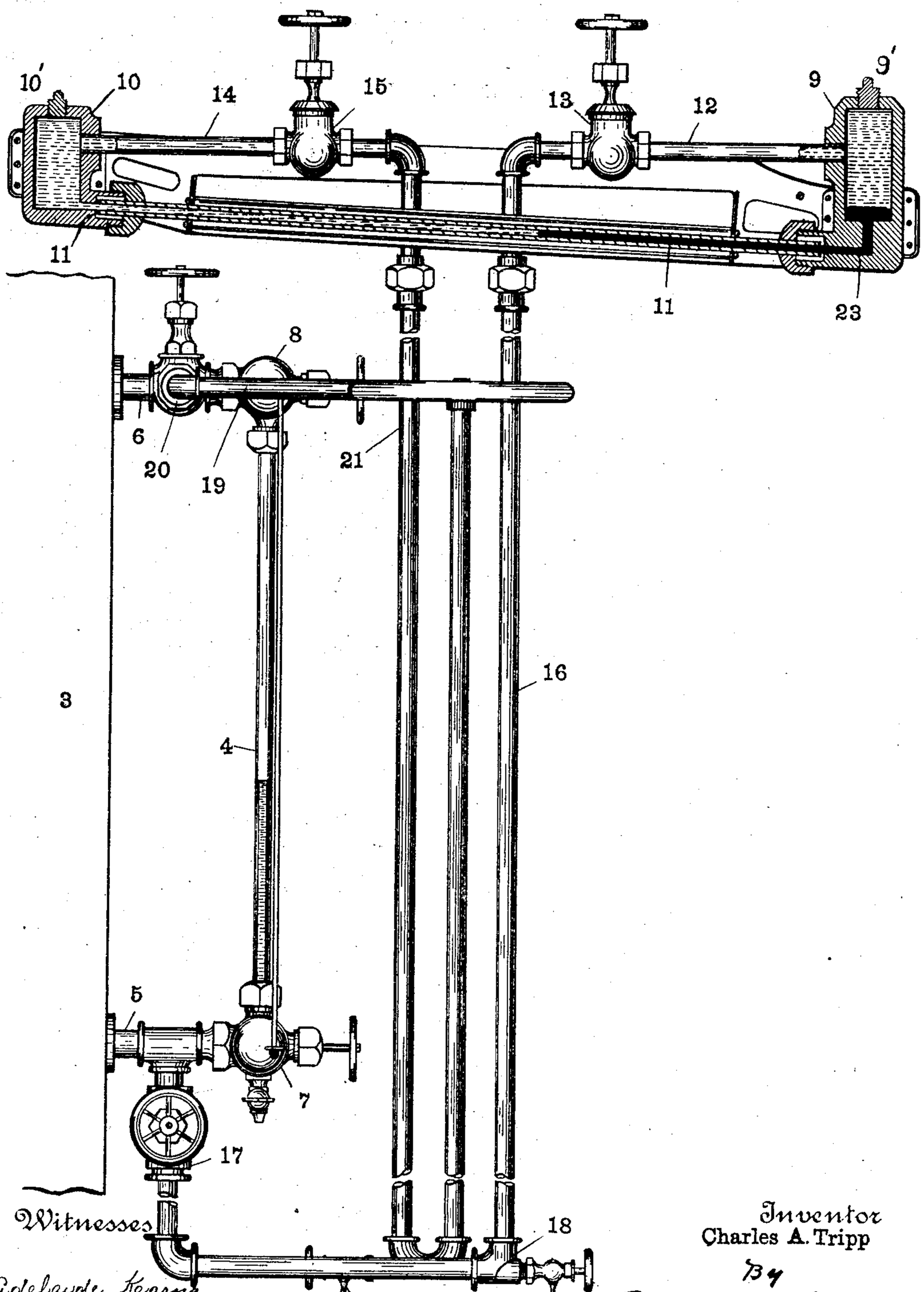
No. 771,447. PATENTED OCT. 4, 1904.

C. A. TRIPP.

LEVEL INDICATOR FOR LIQUIDS.

APPLICATION FILED MAR. 6, 1903.

NO MODEL.



Witnesses

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No. 771,447. Patented October 4, 1904.

UNITED STATES PATENT OFFICE.

CHARLES A. TRIPP, OF INDIANAPOLIS, INDIANA.

LEVEL-INDICATOR FOR LIQUIDS.

SPECIFICATION forming part of Letters Patent No. 771,447, dated October 4, 1904.

Application filed March 6, 1903. Serial No. 146,535. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. TRIPP, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Level-Indicators for Liquids, of which the following is a specification.

My invention relates to an improvement in that class of level-indicators described and claimed in the application of myself and George R. Wadleigh, Serial No. 79,477.

The object of my invention is to provide means by which a gage such as shown in said application may be used at any point irrespective of its relation to the level to be indicated, and is particularly designed for use in connection with reservoirs, such as steam-boilers, (wherein is maintained a gas-pressure in addition to the hydrostatic pressure,) especially at points at or above the normal level to be indicated and, if desired, at a point distant from the boiler or reservoir.

The accompanying drawing illustrates my invention as connected to a steam-boiler at a point considerably above the normal level of water to be indicated.

In the drawing, 3 indicates a boiler provided, if desired, with the usual gage-glass 4, connected at its bottom by pipe 5 and at its top by pipe 6 with the boiler at points below and above, respectively, the normal level of water to be indicated. A valve 7 is located between pipe 5 and the gage-glass 4, and a valve 8 is similarly located between gage-glass 4 and pipe 6. The gage is like that shown in the application already mentioned and consists of a pair of reservoirs 9 and 10, connected by a gage-tube 11, which is inclined slightly to the horizontal, the angle of inclination depending upon the character of reading desired and also upon the difference in specific gravity between the fluid to be indicated and the indicating fluid. Where the measuring fluid is mercury and the measured fluid is water, the inclination of tube 11 should be about one inch in a foot in order to give a reading in tube 11 inch for inch with the reading in tube 4.

Leading into reservoir 9 is a pipe 12, provided with a valve 13, and leading into reservoir 10 is a pipe 14, provided with a valve 15. A pipe 16 connects valve 13 with boiler 3 at a point below the level to be indicated. In the drawing I have shown said connection as being through pipe 5, valve 17 being placed in pipe 16. In order to prevent any possibility of steam passing over into the gage in case the level of water in the boiler should by accident sink below pipe 5, I prefer either to bring pipe 16 into the boiler at a point somewhat below pipe 5, or, as shown in the drawing, pipe 16 drops to a point considerably below pipe 5 and then rises to valve 13, in this manner providing a seal in pipe 16. Located at the lowest point in pipe 16 is a petcock 18. Leading from boiler 3 at a point above the level to be indicated—as, for instance, from pipe 6—is a horizontal condensing-pipe 19, a valve 20 being placed between said pipe and the boiler. Leading first downward from pipe 19 and thereafter upward and leading to valve 15 is a pipe 21, a seal being thus formed between the condensing-pipe 19 and valve 15. In the drawing I have shown pipe 21 dropped downward to a point substantially level with the lowest point of pipe 16; but I am inclined to believe that this is not necessary. At the lowest point in pipe 21 I provide a petcock 22. Each reservoir 9 and 10 is provided with an opening through which it is filled, and these openings are tightly closed by means of suitable plugs 9′ and 10′.

In installation the valve 20 and petcock 18 will be closed and valves 17, 13, and 15 and petcock 22 opened, whereupon water from the boiler will be forced over by reason of the steam-pressure through pipe 16, valve 13, pipe 12, reservoir 9, gage-tube 11, reservoir 10, pipe 14, valve 15, and pipe 21 to petcock 22, and as soon as water flows therethrough the petcock 22 will be closed and valve 20 opened. The steam will pass into the condensing-pipe 19 and there condense and fill the rising arm of pipe 21. In the meantime valves 13 and 15 should be closed and the plugs in the tubes of reservoirs 9 and 10 opened and a sufficient quantity of mercury (or other desirable measuring fluid) 23 poured into the reservoir 9 until it either fills tube 11 or at least rises therein to a point that distance from the lowest visible portion of tube

11 equal to the distance from the lowest visible portion of tube 4 to the bottom of pipe 6. The plugs in reservoirs 9 and 10 will then be closed tightly and valves 13 and 15 opened, whereupon the pressure in reservoir 10 will become greater on account of the steam-pressure in boiler 3 and the mercury will recede in tube 11 until it corresponds in position to the position of the water in tube 4.

I claim as my invention—

In an indicator for indicating variations in level of a body of fluid, a gage-tube intended to receive a registering fluid, a pipe leading from the body of fluid to be indicated to a point below the level to be indicated and passing from thence to one end of the gage-tube, a pipe leading from a point above the level to be indicated, passing from thence downward and thence upward to the opposite end of the gage-tube, the tube being supported at such an angle to the horizontal that the variation of the outer end of the column of registering fluid in the tube will approximate the variation of level of the indicated fluid.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 3d day of March, A. D. 1903.

CHARLES A. TRIPP. [L. S.]

Witnesses:
ARTHUR M. HOOD,
BERTHA M. BALLARD.