(No Model.)

G. R. ELLIOTT & T. H. LAWRIE.

SAFETY WATER COLUMN FOR STEAM BOILERS.

No. 582,624. Patented May 18, 1897.

Fig. 1.

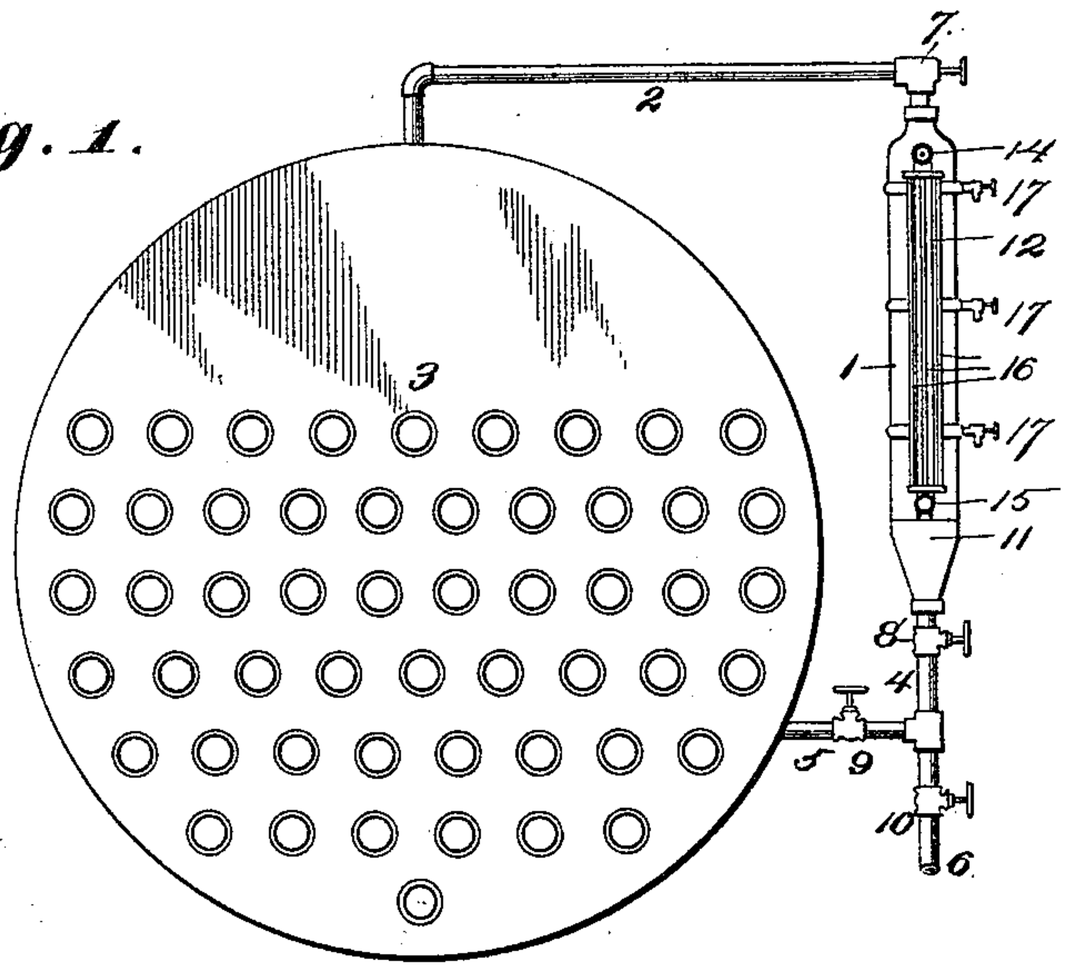


Fig. 2.

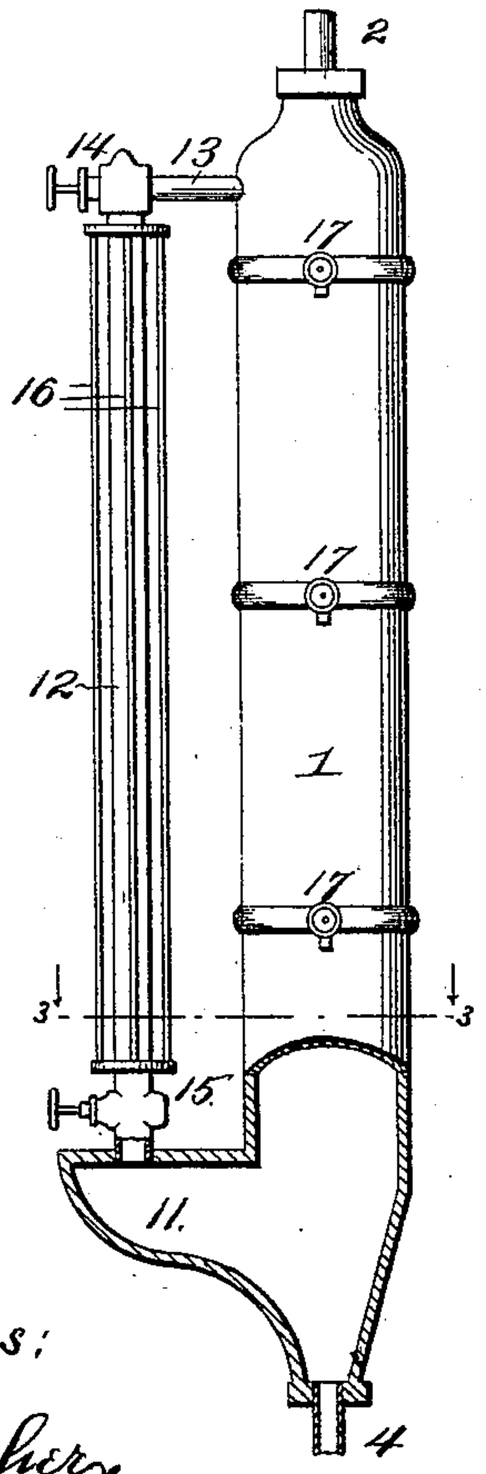
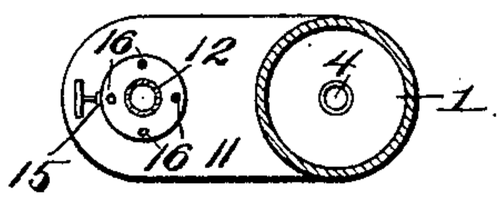


Fig. 3



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UNITED STATES PATENT OFFICE.

GEORGE R. ELLIOTT AND THOMAS H. LAWRIE, OF HIAWATHA, KANSAS.

SAFETY WATER-COLUMN FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 582,624, dated May 18, 1897.

Application filed December 21, 1894. Serial No. 532,556. (No model.)

To all whom it may concern:

Be it known that we, GEORGE R. ELLIOTT and THOMAS H. LAWRIE, of Hiawatha, Brown county, Kansas, have invented certain new and useful Improvements in Safety Water-Columns for Steam-Boilers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to water-columns for steam-boilers, and the primary object of the same is to provide a water-column of such construction that the transparent gage-tube thereof may be easily, expeditiously, and conveniently cleansed whenever necessary or desirable.

A further object of the invention is to provide a column of this character which is simple, strong, durable, and inexpensive of construction.

To the above purposes the invention consists in certain novel and peculiar features of construction and combinations of parts, as will be hereinafter described, and pointed out in the appended claim.

In order that the invention may be fully understood, we will proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is an end view of a steam-boiler provided with a water-column constructed in accordance with our invention. Fig. 2 is an enlarged view, partly in side elevation and partly in section, of the said water-column; and Fig. 3 is a horizontal section taken on the line 3 3 of Fig. 2.

Similar numerals designate corresponding parts in all the figures, in which—

1 designates a tubular column which is connected at its upper end, through the medium of the pipes 2, to the upper side of the boiler 3, and is connected at its lower end, through the medium of the pipes 4 and 5, to the said boiler at any suitable point below the top line of the boiler-tubes.

6 designates a pipe, hereinafter termed the "blow-off" pipe, which is coupled to the pipes 4 and 5 and leads to an ash-pan, drain, or other receptacle. (Not shown.) The flow of water through the pipes 2 is controlled by the globe-valve 7, while the flow of water through the pipes 4, 5, and 6, respectively, is controlled by the globe-valves 8, 9, and 10, all of said globe-valves being of the ordinary or any preferred construction. The column 1 at its lower end is provided with a hollow offset or shoe 11, the bottom of which inclines downwardly, and communicating at its lower end with said offset or shoe and extending parallel with the column proper is the transparent gage-tube 12. Said gage-tube at its upper end also communicates by way of the pipe 13 with the upper end of the column. The flow of water through the tube 12 is controlled by the globe-valves 14 and 15, respectively, at its upper and its lower end. Owing to the fact that the gage-tubes are frequently broken, we mount upon the same near its upper and its lower end disks or plates and connect them by the vertical rods 16, which form practically a skeleton framework, inclosing and protecting said tube from danger of accidental breakage. In securing said column in position relative to the boiler it is preferable to arrange it so that the lowest valve or cock 17 shall occupy the plane of the topmost line of boiler-tubes.

The great difficulty in cleaning the transparent gage-tube and the parts which connect said tube with the column of the ordinary construction of sediment from the water necessitated some change in the construction of the column to obviate said difficulty. Therefore we have provided the offset or shoe 11 at the lower end of the column and connect the lower end of the transparent tube with said offset. It is manifest, therefore, that by closing the valve 9 and opening the valves 8 and 10 all of the sediment may be forced downwardly and out of the gage-tube and its valve 14, owing to the fact that the water and the sediment thereof are deflected by the downwardly-inclined bottom of the said shoe directly into the mouth or upper end of the vertical pipe 4. It is also obvious that the pipe 5, leading to the boiler, may be cleaned by closing the valve 8 and opening the valves 9 and 10, which will permit water from the boiler to escape through said pipes and carry all the sediment with it. By closing the valve 10 and leaving the remaining valves open free circulation of the water is provided. We do not, however, claim these valves and pipes, which are of the ordinary construction and

arrangement, except in combination with the offset or shoe 11, vertically beneath and communicating with the transparent gage-tube 12, so that by the proper manipulation of the valves all sediment may be carried with the escaping water from said gage-tube and its valves, owing to the fact that we have a straight drop or descent from the valve 14, which permits all of the sediment to pass from said tube into the lower end of the column.

From the above description it will be apparent that we have produced a water-column which may be easily and expeditiously cleaned of all sediment, and which practically, by reason of the skeleton framework inclosing the transparent gage-tube, is strong and durable.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

A water-column for steam-boilers comprising a cylindrical tube which tapers at its lower end to a small opening, and is provided with an offsetting chamber which opens directly and uninterruptedly into the lower end of the column, and has its bottom sloped downwardly to the bottom of the column, a drain-tube having its upper end fitting into the aperture at the lower end of the column and thereby communicating directly with the same and with its offsetting chamber, and a valve-controlled gage-tube connected to the upper end of the column and opening at its lower end into the offsetting chamber of the column, substantially as set forth.

In testimony whereof we affix our signatures in the presence of two witnesses.

GEORGE R. ELLIOTT.
THOMAS H. LAWRIE.

Witnesses:
GEO. H. ADAMS,
J. K. KLINEFELTER.