J. S. CRITCHLEY.

STEAM-GAGE SIPHON.

No. 195,444. Patented Sept. 25, 1877.

Fig. 1.

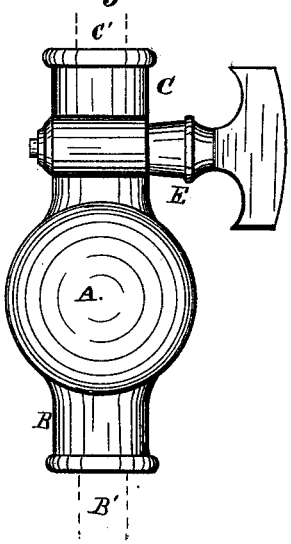


Fig. 2.

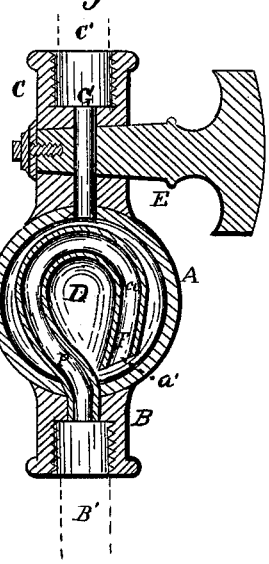
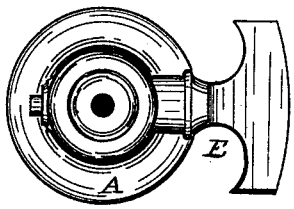


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES S. CRITCHLEY, OF CLEVELAND, OHIO.

IMPROVEMENT IN STEAM-GAGE SIPHONS.

Specification forming part of Letters Patent No. **195,444**, dated September 25, 1877; application filed June 9, 1877.

To all whom it may concern:

Be it known that I, JAMES S. CRITCHLEY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Steam-Gage Siphon; and I do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings, making a part of the same.

The nature of my invention relates to a steam-gage siphon for steam gages or indicators; and the object of the same is to insure correct indication on the gage, and to prevent freezing up of the siphon and retarding the action of gage-indicator.

For a description of the same reference will be had to the drawings, in which—

Figure 1 is a view of the steam-gage siphon; Fig. 2, a vertical section; Fig. 3, an end view.

Like letters of reference refer to like parts in the several views.

In the drawings, A represents a globe, in which is a chamber, and to which are connected two nozzles or pipes, B and C, as seen in Figs. 1 and 2. To the nozzle B is attached a steam-pipe, (indicated by the dotted lines B′,) and extending to the boiler, which brings the chamber D of the globe in open communication with the boiler. In the nozzle C is a cock, E, and to said nozzle C is connected a pipe, (indicated by dotted lines C′,) which extends to the steam-gage, and communicates with the spring piston or diaphragm of such gage as that with which the connection is made; my invention being applicable to any steam-pressure gage provided with the ordinary requisite appendages and mechanism.

The attachment of the pipes to the nozzles B C may be done in the usual manner.

In the chamber D is a siphon, F, (which may be separate or cast with it, so as to form part of the chamber,) one limb of which extends into the bore of the nozzle B, so as to be in open relation with it, and the pipe extending to the boiler, as seen in Fig. 2. The short limb *a* of the siphon opens into the chamber D, and the conduit G also opens into the said chamber and into the pipe extending to the steam gage or indicator. This conduit G or passage is opened and closed by the cock E, as the nature of the case may require.

The practical operation and advantages of my improvement are as follows: After the connection of my steam-gage siphon is made with the boiler and the steam-gage, the steam as it is generated passes through the connecting-pipe and siphon F into the chamber D. The exterior and interior of this chamber may be of any suitable shape, so as to offer a large condensing-surface; hence, as the steam first enters the chamber it becomes condensed, and the (product) water is forced by the steam, as the globe A becomes heated, from the chamber, through the passage G and connecting-pipe, to the steam-pressure gage, this water acting upon the spring, diaphragm, or other device usually connected with the ordinary appendages or devices of such steam-gages, for the purpose of acting upon the pointer or index to show the steam-pressure. The water which has been carried by the action of steam from the chamber D to act on the steam-gage, as before mentioned, is held or forced up in the gage by the pressure of steam, thus interposing a stratum of water between the devices, before mentioned, of the steam-gage, and the column of steam in the connections with the boiler. The object of this is so well understood in the art that explanation may not be here required.

In case the condensation in the chamber is too rapid or becomes filled, the excess of water will be drawn off from the chamber D through the siphon, and returned through the connecting-pipe to the boiler until the water falls below the outlet *a′* of the siphon. After the boiler is at rest and cooled off, there will be, to a certain extent, a vacuum formed in the boiler, which will draw off the water in the chamber D through the siphon; hence in cold and frosty weather there will be no injury to this steam-gage siphon or its connections with the boiler by freezing and bursting or closing up of the passage of the connection, which in either case would prevent the steam gage or indicator from working until the obstructions of ice were removed and repairs made. These obstructions and casualties occur in the use of the ordinary siphon for this purpose.

In making the connections with my invention it is not necessary to place any water either in the chamber or siphon or cell to in-

sure its correct action, as the condensation of the first generation of steam from the boiler will be sufficient to supply the requisite amount of water in the chamber D, as and for the object before mentioned; but in using the ordinary siphon it is necessary, first, before the connections are made with the boiler and steam-gage, to fill the coil or siphon partially with water, which, not being drawn off, as may be with my invention, will in certain states of the weather become frozen up and liable to burst, thereby arresting the operation of the steam-gage.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In steam-gage siphons, the chamber D and siphon F, in combination with the nozzles or pipes B C, substantially as and for the purpose set forth.

2. The siphon F, chamber D, provided with one or more nozzles or pipes, in combination with the cock E, substantially in the manner as described, and for the purpose specified.

3. A steam-gage siphon, consisting of a siphon inclosed within a chamber having two nozzles or communicating-pipes, with one limb of said siphon in open relation to one of said nozzles, and the end or limb opening into the said chamber, in the manner substantially as described, for the purpose specified.

JAMES S. CRITCHLEY.

Witnesses:

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