

(No Model.)

T. H. JONES.
APPARATUS FOR PREVENTING BOILER INCRUSTATION.
No. 549,570. Patented Nov. 12, 1895.

Fig. 1.

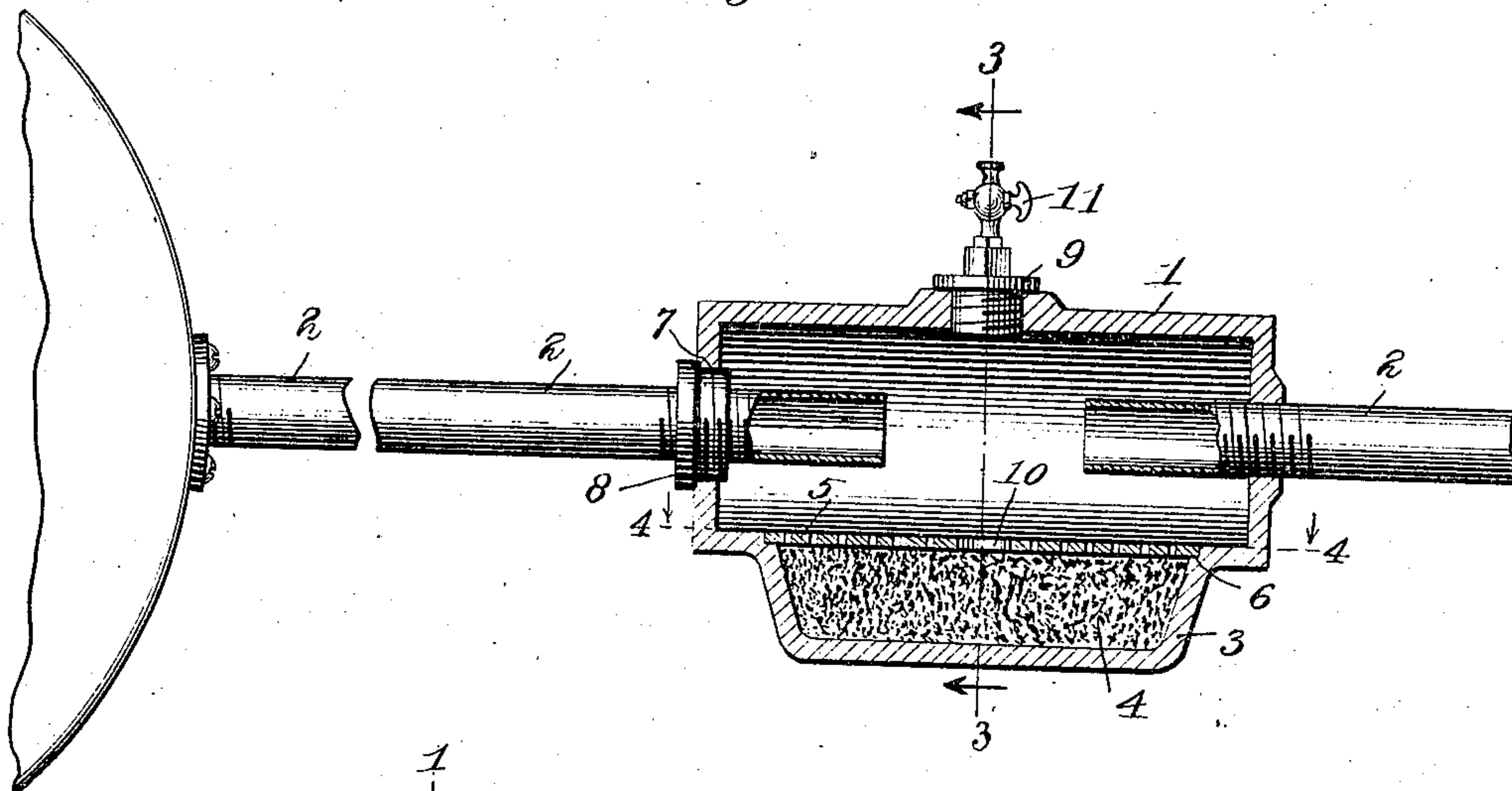


Fig. 2.

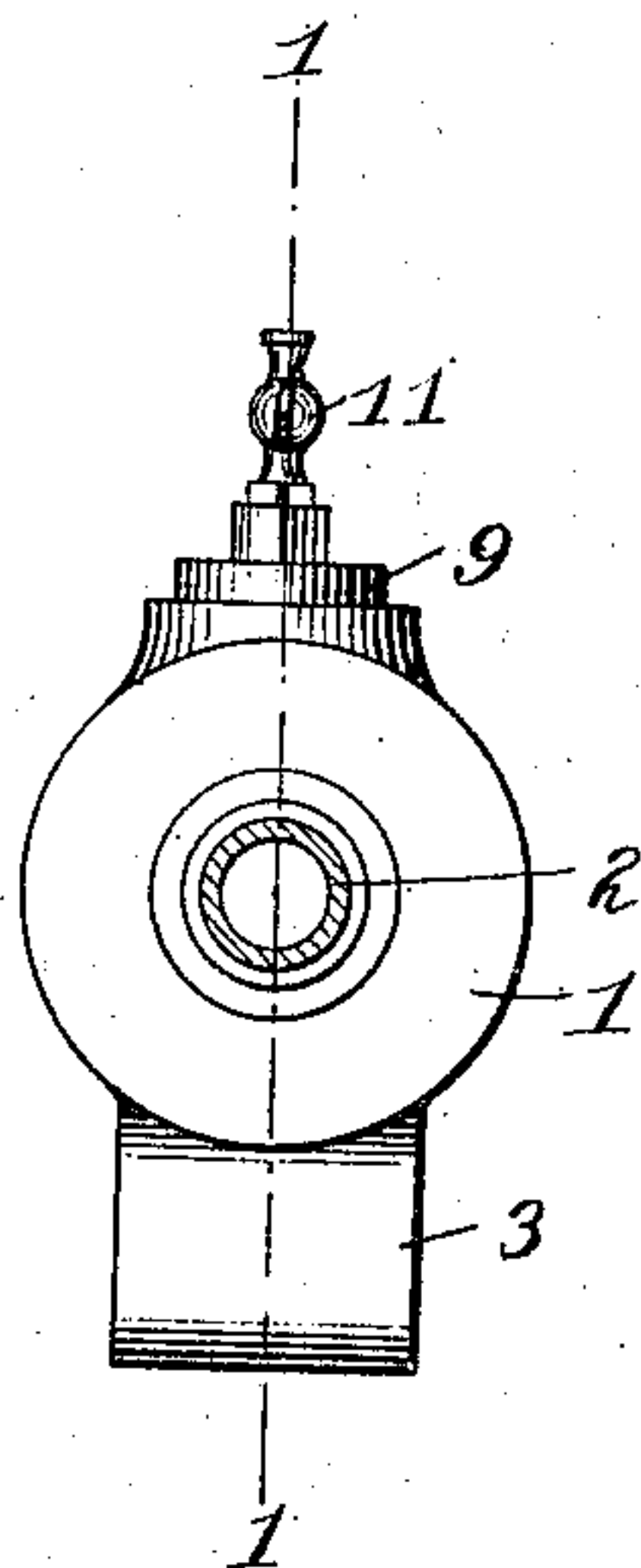


Fig. 3.

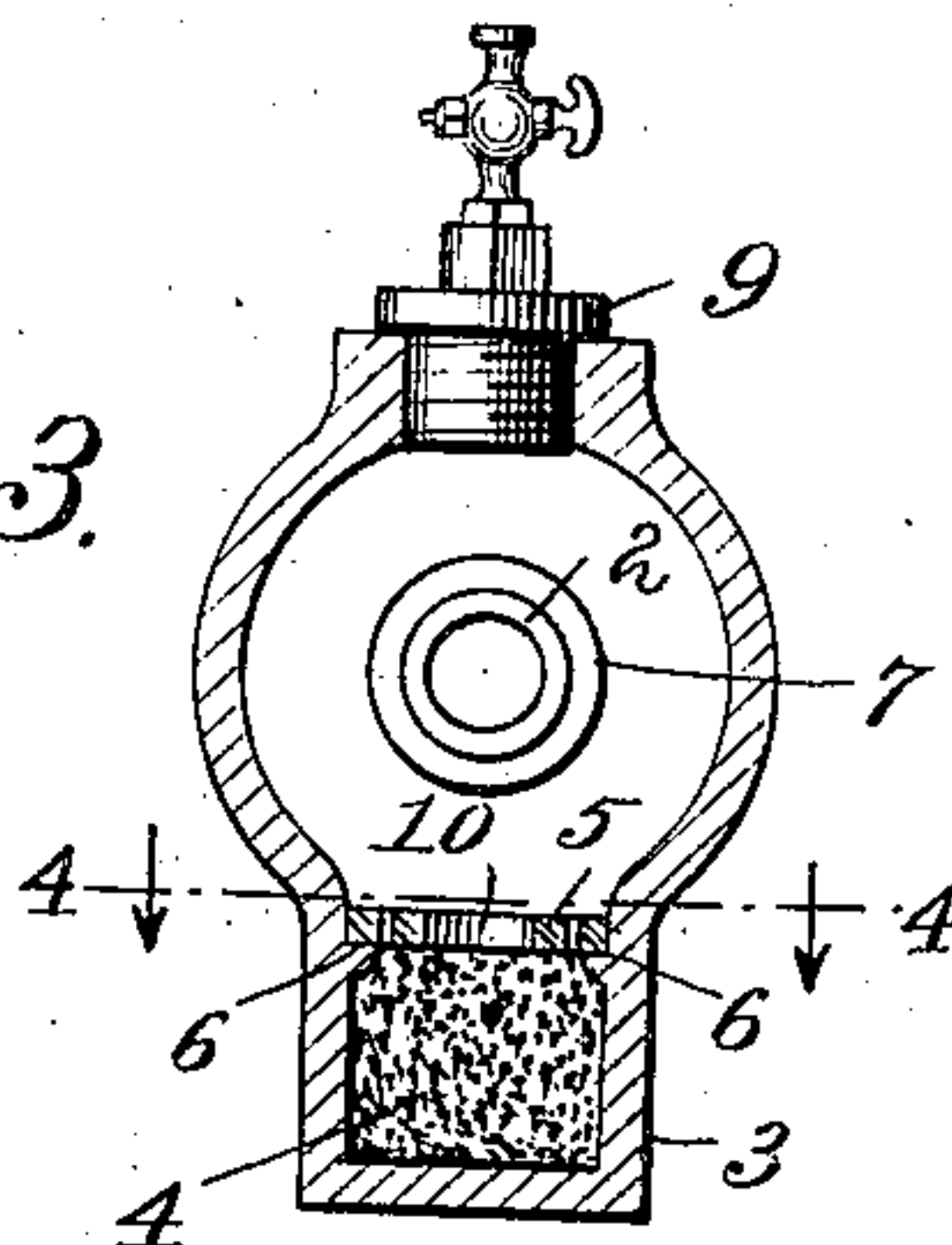
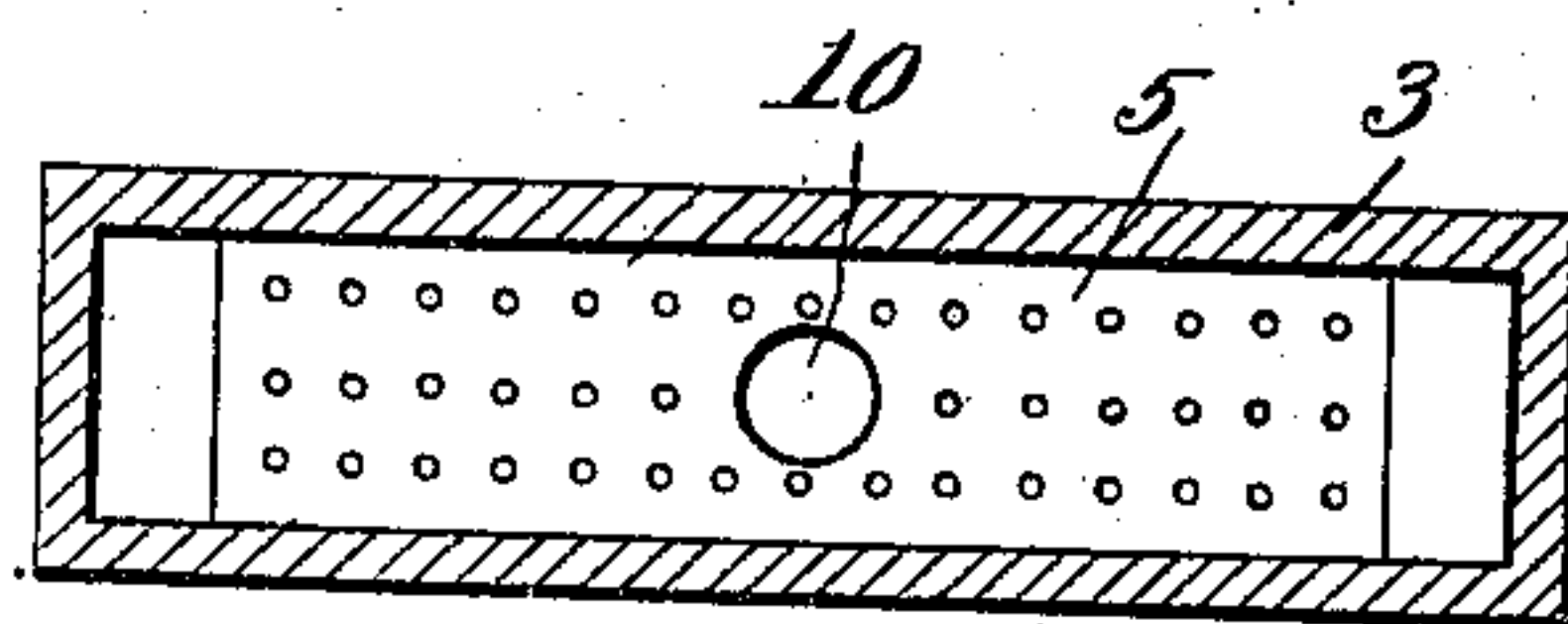


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

THOMAS H. JONES, OF CHICAGO, ILLINOIS.

APPARATUS FOR PREVENTING BOILER-INCRUSTATION.

SPECIFICATION forming part of Letters Patent No. 549,570, dated November 12, 1895.

Application filed April 8, 1895. Serial No. 545,025. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. JONES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Preventing Boiler-Incrustation; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved apparatus for preventing incrustation in steam-boilers, and has particular reference to the use of metallic mercury therefor.

It has been found from practical experiments that mercury slowly volatilizes under hot-water pressure at the common temperatures of feed-water for steam-boilers, and that the exhalations therefrom prevent the carbonates or other impurities in the water from adhering to or incrusting the parts of the boiler.

The object of the invention is to provide a suitable apparatus adapted to be connected to the feed-water pipe between the heater and boiler, by which the process of volatilization may be conveniently carried out in a simple and efficient manner.

The invention consists in the novel features of construction and combination of parts hereinafter described and set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section of my improved apparatus, taken on the line 1 1 of Fig. 2. Fig. 2 is an end elevation of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 1; and Fig. 4 is a section taken on the line 4 4 of Figs. 1 and 3, showing a plan view of the perforated cover-plate.

Referring to the drawings, 1 designates a hollow cylindrical casting adapted to form a connection and continuous passage between the feed-water pipes 2 2, into which the ends of said pipes are adapted to be screwed to form a tight joint therewith. Said hollow casting is provided with a chamber 3, projecting from one side thereof and cast integral therewith. Said chamber is adapted to form a vessel or reservoir for holding the mercury 4, over which a foraminous or perforated cover-

plate 5 is fitted to rest upon shoulder 6, formed at the sides and ends of said chamber. Said cover-plate is adapted to be inserted within said hollow casting through the feed-pipe opening 7 in the end thereof. Said opening is made of sufficient diameter for this purpose, and is closed up by means of a screw-threaded bush 8 upon the feed-pipe. Said feed-pipe ends do not terminate at the inside of the hollow casting ends, but are extended some distance toward its center and brought nearer together to reduce the turbulence or agitation of the water therein. 9 is a screw-plug fitted to an opening through the top of said hollow casting, and a central opening or perforation 10 is formed through the cover-plate in the line with said plug-opening for the purpose of replenishing and refilling the mercury-chamber. A pet-cock 11 is provided at the top for the removal of air from within the hollow-casting, and the feed-water pipe is connected with the feeding apparatus, heater, and boiler, and provided with the usual appliances of cocks and valves therefor.

The apparatus is adapted in size to the capacity of the boiler for which it is designed. In practice it is found (starting with a clean boiler) that for a period of six months three pounds of mercury per hundred horse-power will give the desired result. The boiler should have the customary periodical wash-out, at which inspection should be made to ascertain the quantity of mercury remaining in the apparatus, for which purpose a small spoon adjustable upon a wire rod is provided, adapted to be inserted through the central openings, by which the depths of mercury is measured.

I am aware that metallic mercury, combined with other materials, has heretofore been used for internally coating the surfaces of steam-boilers to prevent rust and incrustation therein, and I make no claim to such as my invention. In my invention no union or amalgamation to form a coating is designed or effected, the scale-formation being prevented solely by the continuous impregnation of the feed-water with the exhaled mercurial vapors.

It is obvious that my invention should not be restricted to the use of metallic or free mercury, as various compounds of other ma-

terial could be used as a vehicle for the mercury, and, in fact, any combination of material for the purpose capable of being slowly volatilized or evaporated might be made use
5 of without departing from the spirit of my invention.

Having described my invention, I claim—

1. The herein described apparatus for preventing scale formation in steam boilers comprising, in combination with the feed water
10 pipe, a hollow casting connecting with said feed pipe, a chamber or reservoir formed integral with said casting, adapted to contain mercury or other evaporative substances, and
15 a cover plate for said reservoir provided with perforations through which the feed water is brought in contact with the mercury in said reservoir, substantially as and for the purpose described.

20 2. The combination with the feed water pipe of a steam boiler, of an apparatus for im-

pregnating the feed water with the vaporized exhalation of mercury or other slowly evaporative material substances, adapted to prevent incrustation in steam boilers, consisting of a hollow casting 1, connected with
25 said feed water pipe, a chamber or reservoir 3, cast integral with said hollow casting, a perforated cover plate 5 for said chamber or reservoir, and an opening 7 in the end of said
30 hollow casting of sufficient size to admit the insertion therethrough of said cover plate; said opening adapted to be closed by means of a bush 8 screwed upon the feed pipe, substantially as for the purpose described. 35

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

THOMAS H. JONES.

Witnesses:

CHARLES W. BLODGETT,
WALTER C. JOHNSON.