

No. 626,150.

Patented May 30, 1899.

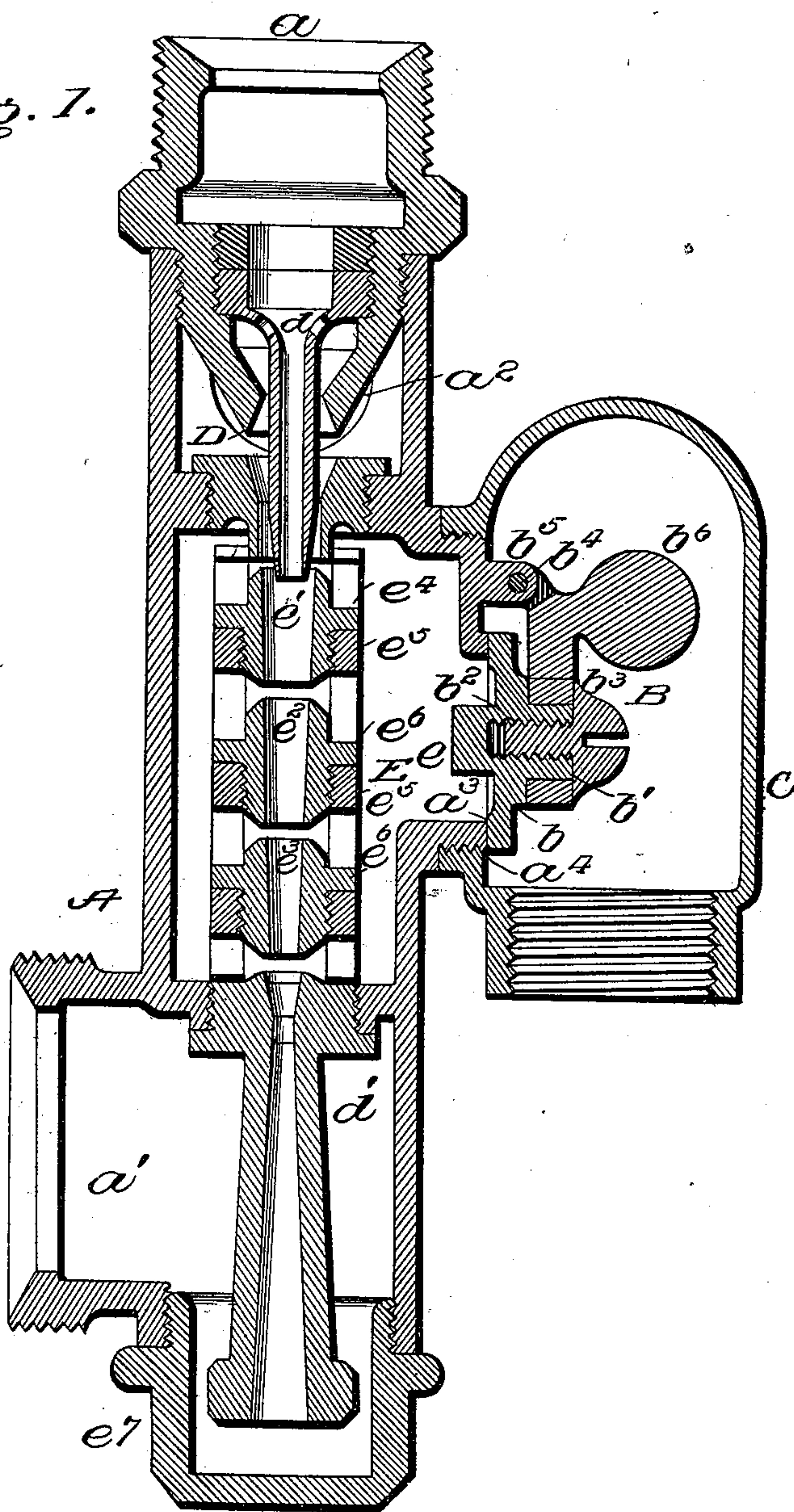
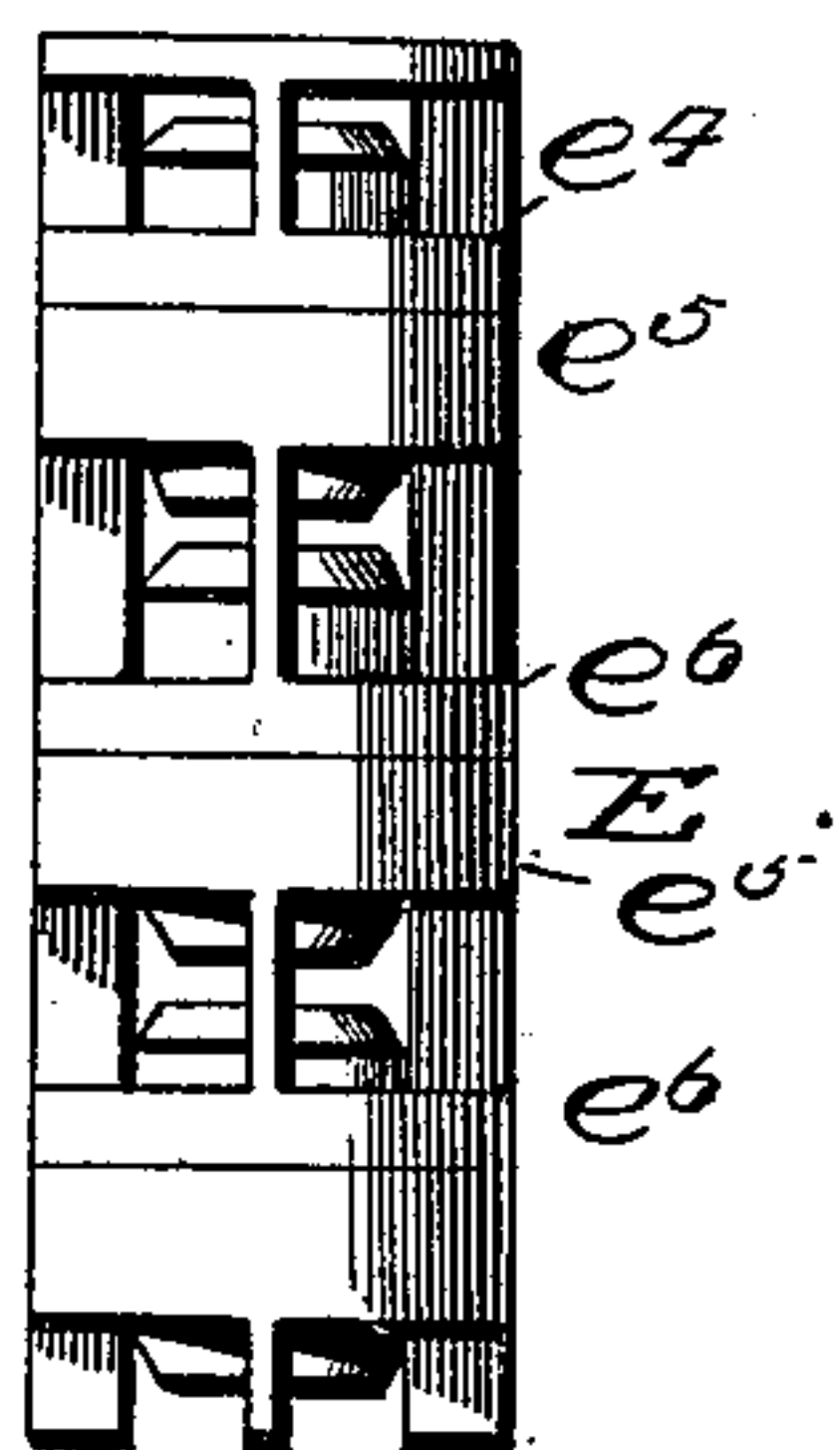
J. DESMOND.  
STEAM INJECTOR.

(Application filed Jan. 28, 1898.)

(Model.)

Fig. 1.

Fig. 2.



Witnesses

*Sam. L. Moya*

Inventor

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# UNITED STATES PATENT OFFICE.

JOHN DESMOND, OF NEW YORK, N. Y.

## STEAM-INJECTOR.

SPECIFICATION forming part of Letters Patent No. 626,150, dated May 30, 1899.

Application filed January 28, 1898. Serial No. 668,251. (Model.)

*To all whom it may concern:*

Be it known that I, JOHN DESMOND, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Steam-Injectors; 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 contemplates certain new and useful improvements in steam-injectors.

The object is to so construct the combining-tube that it will take up the contents of the chamber in which it is positioned at a plurality of points.

The invention will be hereinafter fully set forth, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view. Fig. 2 is a view of the combining-tube.

Referring to the drawings, A designates the shell or casing;  $a$ , the steam-inlet;  $a'$ , the water-inlet;  $a^2$ , the outlet to the boiler, and  $a^3$  the opening for the overflow. This latter opening is formed at the end of an exteriorly-threaded boss  $a^4$  of casing A.

B is a valve for normally closing the opening  $a^3$ . It is composed of a disk  $b$ , having a central boss  $b'$ , which is interiorly threaded to receive a screw  $b^2$ . The outer end of boss  $b'$  fits in a hole or opening in the lower end of an arm  $b^3$  and is securely held by screw  $b^2$ . This arm  $b^3$  is pivoted at its upper end at  $b^4$  to a lug  $b^5$  of casing A and is provided with a rounded thickened portion  $b^6$ , which acts as a weight. The object of thus weighting the arm  $b^3$  is to insure the seating of valve B. The latter normally occupies a truly vertical position and closes the outlet through opening  $a^3$ . By removing screw  $b^2$  the disk can be easily removed from arm  $b^3$ , and if worn or damaged a new one may be substituted.

A removable casing C, screwed on boss  $a^4$ , incloses the valve B. It is open at its outer lower end to allow of the passage of the overflow and may be interiorly threaded for the attachment thereto of a pipe or hose-coupling. By removing this casing access can be had to the valve and its adjuncts.

D is the steam-inlet tube,  $d$  the lifting-tube, and  $d'$  the delivery-tube.

The combining-tube E is located in chamber  $e$ . This chamber is known as the overflow-chamber, and over the outlet-opening  $a^3$  thereof is positioned the valve B. This combining-tube is made up of a series of sections  $e'$ ,  $e^2$ , and  $e^3$ , formed with coincident openings, each having a gradual conical taper toward the delivery-tube, preserving the conical bore requisite in combining-tubes of steam-injectors. These several sections are supported within an open-work shell  $e^4$ , which is provided with partitions  $e^5$ , having threaded openings to accommodate the threads on the exterior of said sections. The shell  $e^4$  may itself be composed of a series of sections removably united. Lateral flanges  $e^6$  of the several sections  $e'$ ,  $e^2$ ,  $e^3$  are designed to fit against the partition  $e^5$ . The shell  $e^4$  extends the full length of the chamber and may be removed by withdrawing the delivery-tube after an end plug  $e^7$  is unscrewed from the casing. By thus mounting the series of sections within the shell  $e^4$  a small space is left between said sections and also between the upper and lower sections and the ends of the adjacent tubes, the lifting and delivery tubes. Thus I provide four openings to accommodate the spill and also to allow the liquid contents of the chamber  $e$  to be taken up at any one or more of these several openings. As is well known in the art, in the operation of a steam-injector the amount of water in the overflow-chamber depends upon the steam-pressure. Under certain pressure this chamber will be nearly filled with water, while under a heavier head of steam it will be practically empty.

While I have found that a steam-injector having a combining-tube constructed as described possesses many advantages, yet it has been found that a combining-tube formed with a plurality of openings is of special advantage when used for feeding a lubricant to a boiler, such lubricant being fed directly into the chamber  $e$ . In a concurrent application for patent filed January 15, 1898, Serial No. 666,799, I have shown and described a lubricator thus combined with a steam-injector.

The advantages of my invention will be ap-

parent to those skilled in the art to which it appertains, and it will be specially observed that by forming a combining-tube as stated the injector will have increased efficiency.

5 I claim as my invention—

In a steam-injector having a removable delivery-tube and an end plug in line therewith, a combining-tube composed of a shell resting on said delivery-tube and having  
10 spaced-apart openings throughout its length, partitions between said openings having central threaded openings therein, and a series of tubular sections having exterior threads

engaging said threaded openings of said partitions, the bores of said tubular sections being gradually tapered toward the delivery-tube, and external flanges on said tubular sections designed to bear on said partitions, substantially as set forth. 15

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 20

JOHN DESMOND.

Witnesses:

B. Z. SUSSHOLZ,

SEBASTIAN SANDER.