

No. 694,236.

Patented Feb. 25, 1902.

H. BÉDET.  
STEAM GENERATOR.

(Application filed Nov. 5, 1901.)

(No Model.)

Fig. 1.

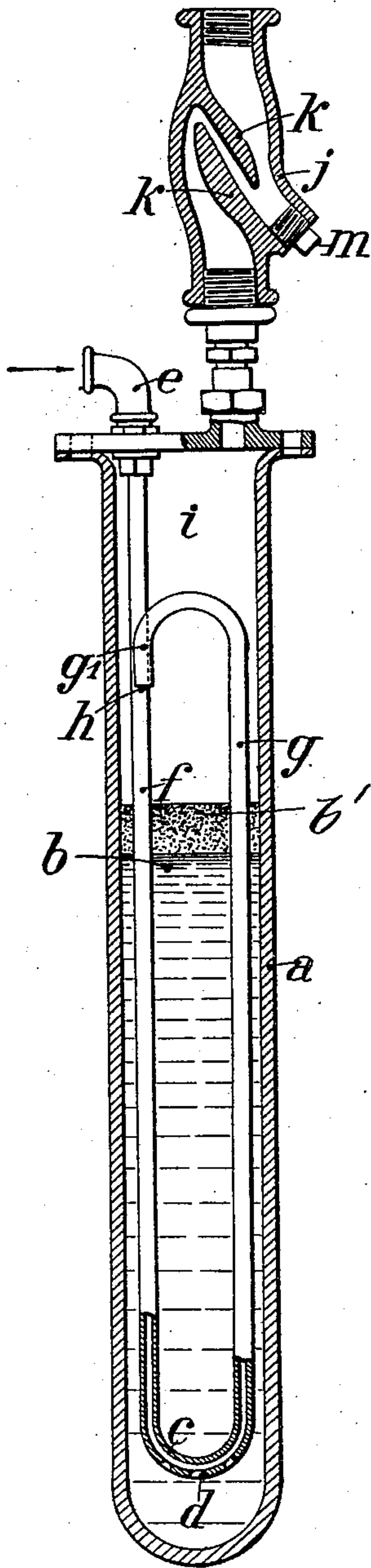


Fig. 2.

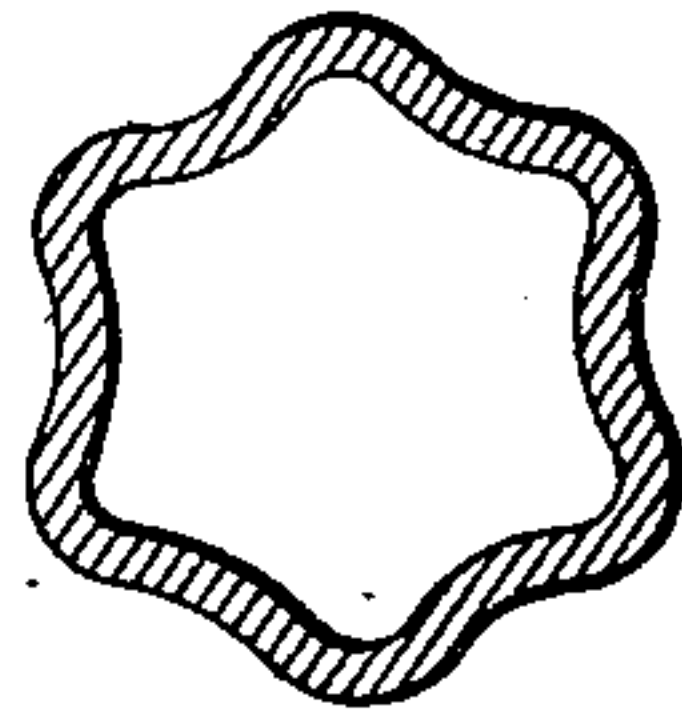


Fig. 3.

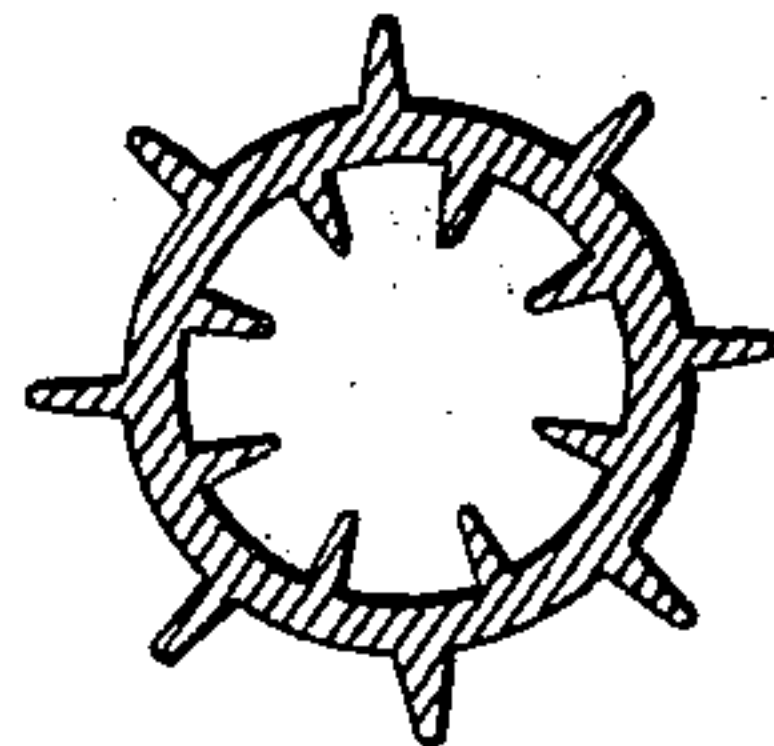
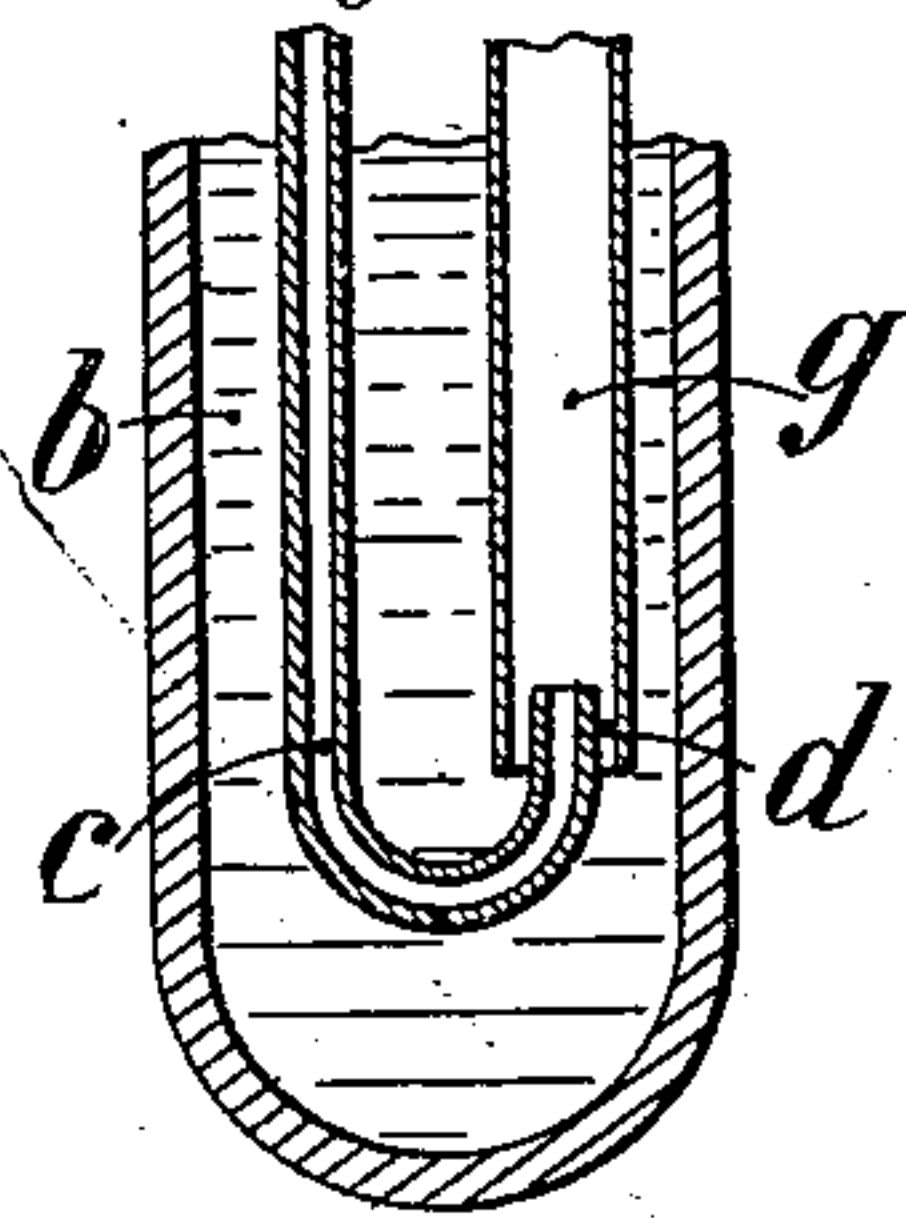


Fig. 4.



Witnesses:  
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*Atty.*



# UNITED STATES PATENT OFFICE.

HENRI BÉDET, OF LA PLAINE ST. DENIS, FRANCE.

## STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 694,236, dated February 25, 1902.

Application filed November 5, 1901. Serial No. 81,272. (No model.)

*To all whom it may concern:*

Be it known that I, HENRI BÉDET, engineer, a citizen of the French Republic, residing at La Plaine St. Denis, Seine, France, (having  
5 post-office address 15 Rue de la Justice, in said city,) have invented certain new and useful Improvements in Steam-Generators, of which the following is a specification.

This invention has for its object to provide  
10 a steam-generator by which steam can be instantaneously generated, the said generator being constituted by closed tubular elements containing a bath of molten tin or other metal or alloy having a melting-point which  
15 will enable it to be maintained in a liquid or molten condition by the application of heat. A thin tube of U form dips into the metallic bath, the lower bend being perforated. The upper part of the return branch of the said  
20 U-tube is bent downward, and the outlet at this end is above the metallic bath and is presented toward it. This new generator produces steam very rapidly and abundantly without metal or alloy from the bath being  
25 carried out with the steam.

In order that my invention may be readily understood, I will describe it more particularly with reference to the accompanying drawings, which represent in vertical section one element of a steam-generator made  
30 in accordance with my invention.

Figure 1 is a central vertical section. Figs. 2 and 3 are sectional plan views showing modifications of the form or configuration of the  
35 tube *a*. Fig. 4 is a partial vertical section showing a modification of the arrangement for bringing the water and alloy into contact.

*a* is a closed tube containing a bath *b* of liquid tin or other suitable metal or alloy.  
40 Into this bath dips a long U-shaped tube, the lower part *c* of which is perforated at *d*. Water to be evaporated enters through the elbow-piece *e* into the downward branch *f* of the U-tube, the outlet of which is at the  
45 other end at top of the return or upward branch *g*, which is of such a length that the outlet is above the molten metallic bath, the said end being bent downward so as to form a third branch *g'*, which presents the outlet  
50 *h* toward the molten metallic bath. Above the bath is a steam-space *i*, which is in communication with the steam valve or cock by

a connecting-piece *j*, containing baffles *k* to arrest any small particles of molten metal or alloy or water which might be carried up  
55 by the steam. A plug *m* allows the said connecting-piece *j* to be readily examined and cleaned. In practice, however, no such metal or alloy is found in this connecting-piece. The water does not pass into the bath through  
60 the perforations *d* in the lower bend of the U-tube, as if it did it would evaporate with violence on coming in contact with the molten metal or alloy and by bubbling therethrough would carry metal or alloy into the said con-  
65 necting-piece. The water on reaching the lower part of the U-tube goes up the upward branch *g* and carries up with it molten metal or alloy from the bath in the manner in which steam in a Giffard injector carries with it feed-  
70 water. The entrained metal or alloy by intimate contact with which the water is vaporized is thrown back into the bath through the outlet at the end of the branch *g'*.

A steam-generator constructed in accord-  
75 ance with my invention may contain any number of elements such as I have described, and any suitable means of heating (by the combustion of hydrocarbons, for instance) may be employed which will keep the bath in  
80 the requisite liquid or molten condition. A bed of pulverulent carbon *b'* may cover the metallic bath in order to save the same from oxidation.

The simultaneous circulation of water and  
85 molten metal in the tubular system may be as indicated in the Fig. 4. The feed-water of the pumps can rush from the tube *c* in a separate tube *g*. The metal of the bath will then come up with the water in the tube *g*  
90 through the annular space *d*.

I have described what I consider the best way of constructing the elements according to my invention; but I do not limit myself to the precise details described and illustrated.  
95

Having now particularly described and ascertained the nature of my invention and the manner in which the same is to be performed, I declare that what I claim is—

1. In a steam-generator, an outer tube  
100 adapted to contain a molten alloy, a U-shaped inner tube suspended in said outer tube and provided with perforations in its lower portion, the discharge end of the inner tube be-

ing above the surface of the alloy and bent to present the orifice toward the latter, substantially as described.

2. In a steam-generator, an outer tube  
5 adapted to contain a molten alloy and an inner water-tube connected with a source of supply submerged in said alloy and so constructed as to admit the latter to its lower submerged portion, the discharge end of said  
10 inner tube being bent to bring the orifice above and presented toward the alloy, substantially as described.

3. In steam-generators of the class described, a tube to contain a molten alloy,

a U-shaped water-tube connected with a 15 source of supply submerged in said alloy, openings in the lower part of the water-tube, the other end of said water-tube being above and presented toward the alloy, and a bed of pulverulent carbon on the surface of the alloy, substantially as described. 20

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRI BÉDET.

Witnesses:

EDWARD P. MACLEAN,  
EMILE KLOBE.