

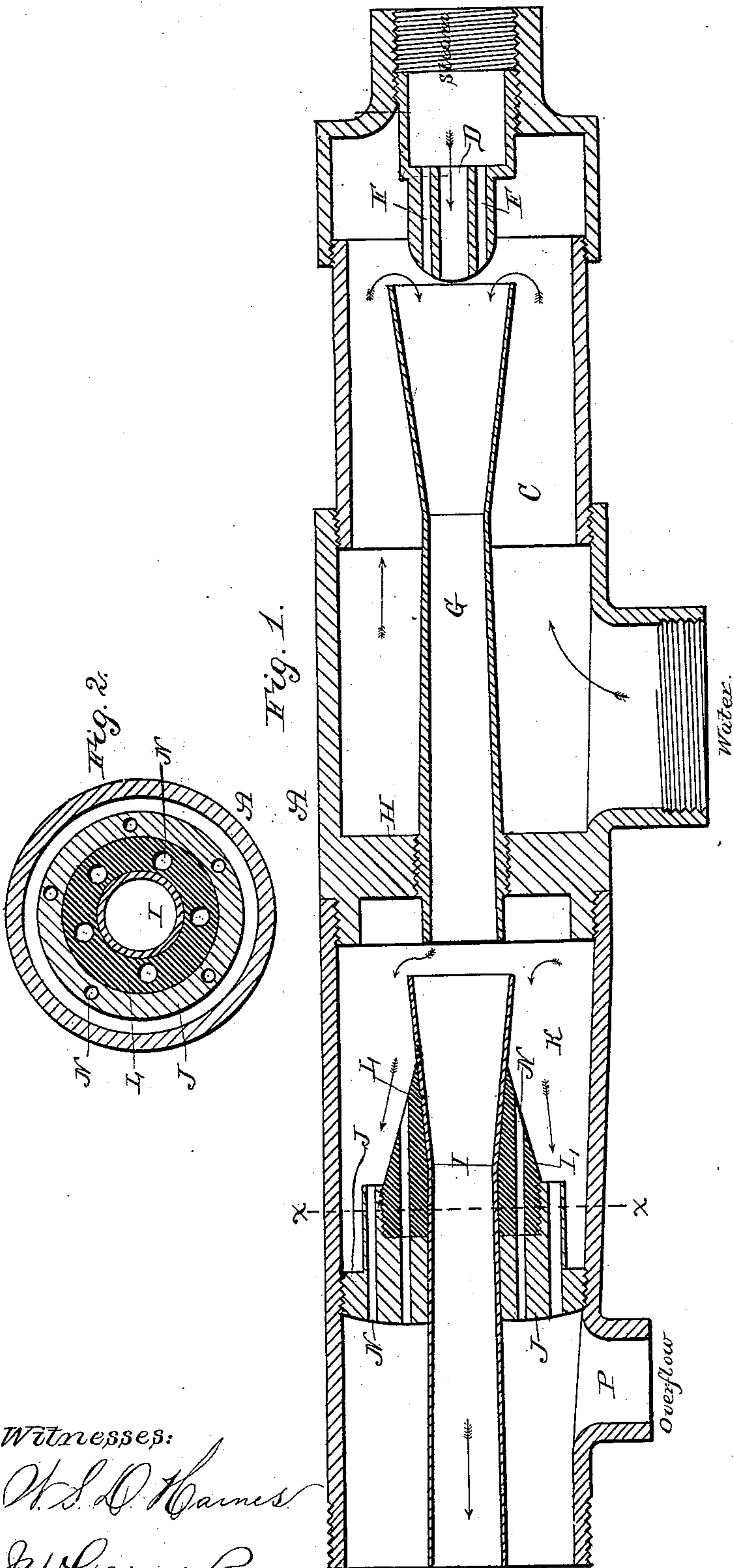
(Model.)

W. T. EWING.

INJECTOR.

No. 297,511.

Patented Apr. 22, 1884.



Witnesses:  
W. S. D. Barnes  
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W. T. Ewing,  
per  
J. A. Lehmann, atty



# UNITED STATES PATENT OFFICE.

WILLIAM T. EWING, OF CHICAGO, ILLINOIS.

## INJECTOR.

SPECIFICATION forming part of Letters Patent No. 297,511, dated April 22, 1884.

Application filed August 27, 1883. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM T. EWING, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water or Air 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in injectors; and it consists, first, in the combination, in an injector, of a condensing-chamber provided with a nozzle or nozzles and a pipe through which water and steam are conducted, the nozzle being provided with a series of openings around the pipe; second, in an injector, the combination of the suction-chamber, a steam jet or nozzle provided with a series of auxiliary jets, the pipe through which the water is forced, the condensing-chamber, the pipe through which the water is carried away, and the nozzles provided with a removable cone, which is provided with a series of apertures or openings through which water is forced from the chamber, all of which will be more fully described hereinafter.

Figure 1 is a vertical horizontal section taken through the center of an injector embodying my invention. Figs. 2 and 3 are detailed views of the same.

A represents the body of the injector, which may be formed of a number of pieces, as shown, or which will be cast in one or more pieces, as may be preferred. At one end of this body A is formed a connection for the steam-pipe, and inside of the suction-chamber C is placed the steam-nozzle D. Around the main-jet orifice of this conical nozzle are made a number of smaller jets, F, which act as an auxiliary to the main jet, and assist both in forming a more perfect vacuum in the suction-chamber, and to force the water forward through the pipe G with greater force. This pipe G, which is made conical at its outer end, is secured in or cast with the partition H, which separates the suction and condensing chambers, as shown. The water is forced forward through this pipe into the condensing-

chamber K, and a portion of it is forced on directly through the pipe I, which is secured in the condensing-nozzle J, which nozzle forms a wall or partition for the outer end of the condensing-chamber. Around this pipe and secured to the nozzle J is a smaller conical nozzle, L, and these two nozzles are provided with a series of small holes, N, through which the water from the chamber is forced. These holes may be arranged either in the relation to each other shown in Fig. 2 or in any other that may be preferred. All of that water which drops down in the condensing-chamber below the ends of the pipes would remain in the chamber, and simply exert so much pressure upon the water and steam which are passed through, were it not for these small openings or orifices; but where these orifices are formed all of the water in the condensing-chamber will be kept constantly moving, as it will then flow out through these orifices directly into the body or pipe. Through the lower side of the body is made the overflow-opening P, which will be kept closed, and is only used in starting the injector.

Having thus described my invention, I claim—

1. The combination, in an injector, of a condensing-chamber provided with a nozzle or nozzles and a pipe through which the water and steam are conducted, the nozzle being provided with a series of openings around the pipe, substantially as set forth.

2. In an injector, the combination of the suction-chamber, a steam jet or nozzle provided with a series of auxiliary jets, the pipe through which the water is forced, the condensing-chamber, the pipe through which the water is carried away, and the nozzles J, provided with a removable nozzle or cone, both of the cones being provided with apertures or openings through which the water is forced from the chamber, substantially as specified.

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

WILLIAM T. EWING.

Witnesses:

WILLIAM H. MCGUIRE,  
WILLIAM MESSING, Jr.