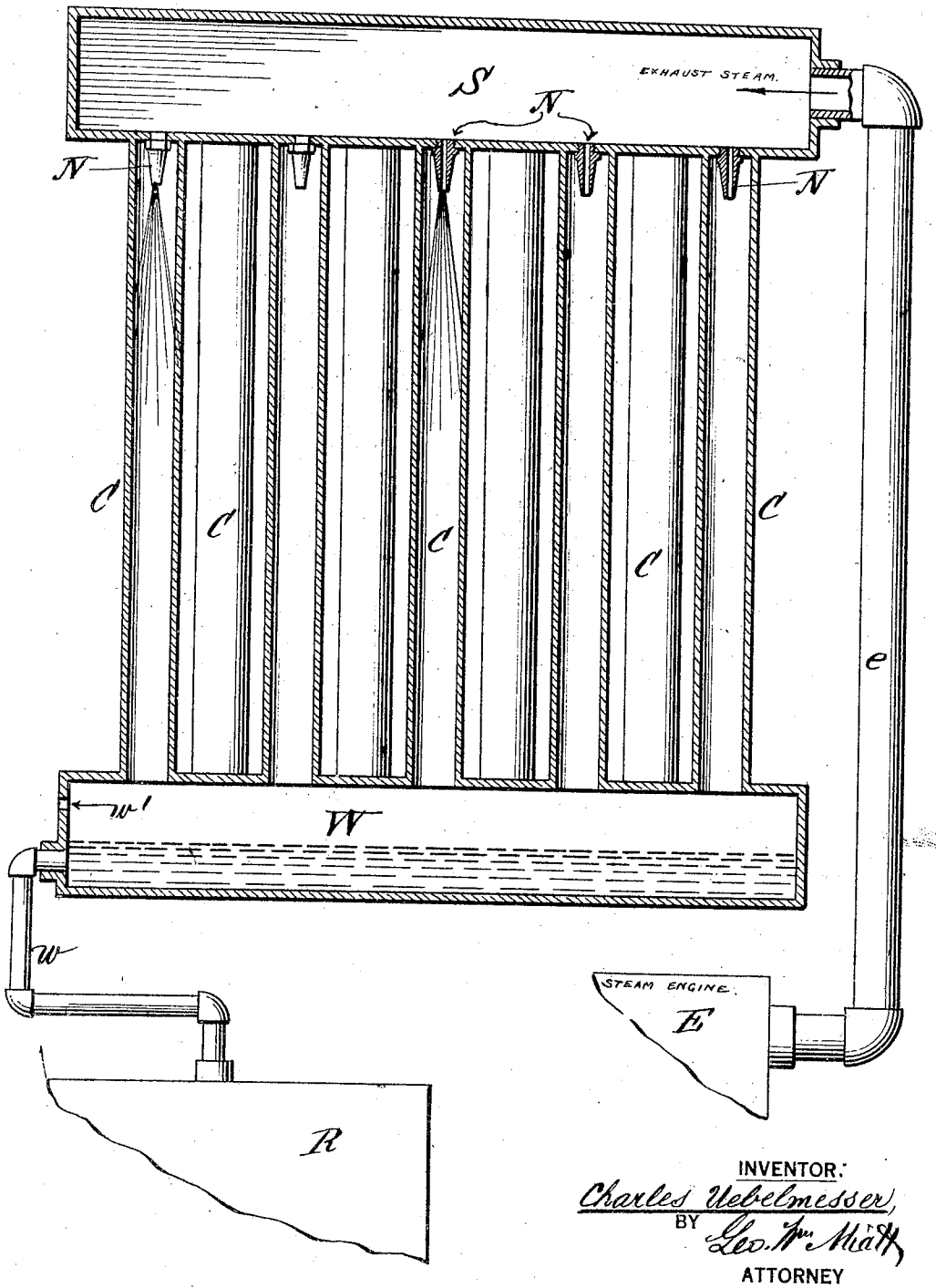
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STEAM CONDENSING MEANS

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STEAM-CONDENSING MEANS.

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The object of my invention is to afford simple, inexpensive, but effective means whereby steam may be quickly and conveniently condensed and disposed of as required, as for instance, in the condensation of exhaust steam from steam engines, or for analogous purposes; and to this end the invention consists essentially in the specific combination, construction and arrangement of parts and elements described and claimed herein,—a distinctive feature being the injection of the steam through contractive nozzles into a plurality of condensing tubes in such manner as to create a partial vacuum therein, whereby expansion of the steam and rapid condensation thereof is attained, all as hereinafter fully set forth.

In the accompanying drawing I illustrate, more or less diagrammatically, a practical embodiment of the essential features of my invention.

With this understanding the drawing referred to may be designated as a vertical sectional elevation of my new type of steam condenser, interposed between a source of steam supply, as for instance the cylinder head of a steam engine, E, and a reservoir R, for the reception of the water of condensation, both of which elements are represented symbolically in said drawing.

Thus, the pipe *e*, from the engine E, conducts the exhaust steam therefrom to the inlet or exhaust steam chest S, of the condenser, as considered in a unitary sense, and the pipe *w*, conducts the water of condensation from the reception chamber W, to the reservoir R, or to other repository.

Interposed between and connected with the said exhaust steam chest S, and the said water reception chamber W, are a series of condensation tubes C, C, their lower extremities opening for their full diameter into the water reception chamber W, but having their upper extremities closely sealed except only for the steam injection nozzles N, N, which protrude into the upper extremities of said condensation tubes C, C, and communicate with the exhaust steam chest S.

The number of injection nozzles N, N, and their combined area of discharge, should be proportionate to, and at least equal the area of the exhaust steam pipe *e*, so as to obviate possibility of back pressure; and said nozzles should be positioned, as shown, each in axial alignment with the central vertical axis of its condensation tube C. In this connection it may be stated that *w'*, is a vent in the water reception chamber W, to obviate back pressure therein, and in the condensation tubes C, C.

In operation the injection of steam through the nozzles N, N, into the upper portions of the otherwise sealed condensation tubes creates therein a partial vacuum above and adjacent to the discharge orifices of said nozzles, and this reduction of initial pressure results in high expansion of the steam and consequent rapidity of condensation.

Hence it is obvious that, aside from the simplicity of construction and arrangement of my steam condenser, the distinctive characteristic thereof is the provision of the injector nozzles in the otherwise sealed upper portions of the condensation tubes, and the method thus involved of promoting condensation of steam by expansion thereof under partial vacuum, in essentially the manner described.

The condensation tubes C, C, are exposed externally to contact with the atmosphere, and cooled thereby.

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

Steam condensing means of the character designated, comprising an exhaust steam chest, a chamber for the reception of water of condensation formed with an air vent, and a plurality of condensation tubes interposed between said steam chest and said water receptacle and opening into the latter at their lower extremities, the upper extremity of each condensation tube being sealed as related to the steam chest, and an injection nozzle positioned in the upper portion of each condensation tube and communicating with the said steam chest, substantially in the manner and for the purpose set forth.

CHARLES UEBELMESSER.