

A. L. WEBRE.
EVAPORATING APPARATUS.
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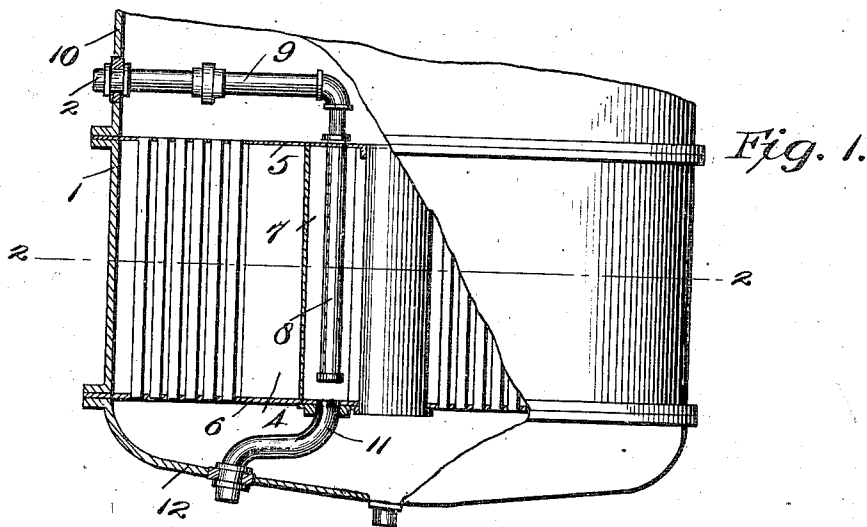
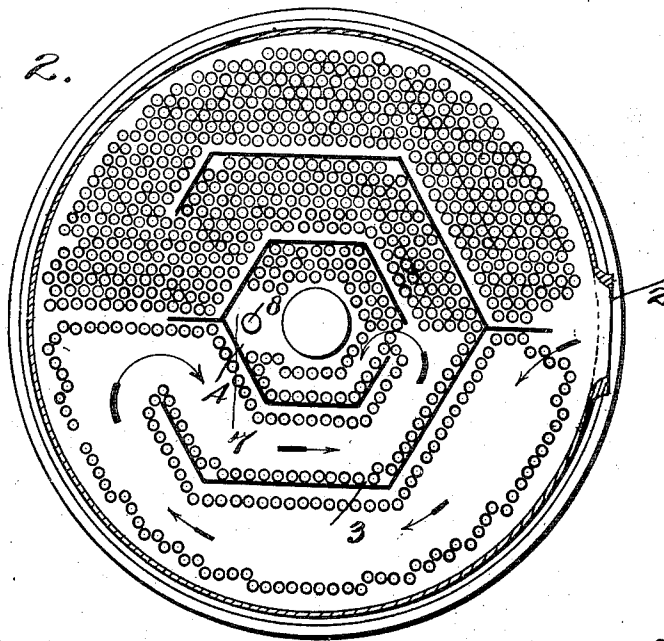


Fig. 2.



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UNITED STATES PATENT OFFICE.

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EVAPORATING APPARATUS.

1,049,425.

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To all whom it may concern:

Be it known that I, ALFRED L. WEBRE, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Evaporating Apparatus; 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.

My invention relates to improvements in evaporating apparatus, such as vacuum pans and multiple effects, and it consists in the constructions, combinations and arrangements herein described and claimed.

An object of my invention is to provide an improved steam belt for evaporating apparatus adapted to insure an efficient flow and action of the heating gases, for maintaining a maximum efficiency and uniformity of operation thereof.

A further object of my invention is to provide an improved steam belt having means for maintaining a continuous flow of the heating gases at a substantially uniform temperature and high velocity, whereby the heating surfaces will be scoured by the rapidly moving gases, and a maximum evaporative capacity of the heating surfaces maintained by the rapid impingement of said gases thereon.

In the accompanying drawings forming a part of this application, and in which similar reference symbols indicate corresponding parts in the several views:—Figure 1 is a side elevation, partially in central section, of a steam belt, illustrating one embodiment of my invention; and Fig. 2 is a section on the line 2—2 of Fig. 1, with a portion of the heating tubes omitted.

Referring to the drawings, 1 indicates a steam belt provided with an inlet 2 for the heating gases and with baffle plates 3 and 4 extending between the upper and lower tube sheets 5 and 6 to provide a pair of symmetrically arranged, duplicate, continuous branch passages which emerge together at their terminals 7. The continuous passages are formed of progressively decreasing cross-section for maintaining a uniform high velocity of the heating gases throughout, and preventing any material drop in the temperature and pressure of such flowing gases; whereby the heating surfaces

will be scoured by the rapidly moving gases, and a maximum evaporative capacity of the heating surfaces maintained by the rapid impingement of said gases thereon. The air, ammonia, and other dead or undensified gases of the heating medium are withdrawn by a perforated pipe 8 extending within the common terminal 7 of the continuous passages, and communicating with a pipe 9 leading from the upper tube sheet 5 through the side 10 of the evaporating apparatus; the condensed vapors of the heating gases being discharged from said common terminal 7 through a drain pipe 11 extending from the lower tube sheet 6 through the bottom 12 of the apparatus. During such flow of the heating gases through the continuous passages, the liquid of condensation is forcibly driven by the continuous blast to the common terminal 7 of said passages, where it is rapidly discharged through the outlet 11 and the ammoniacal and other dead gases forced through the perforated discharge pipe 8.

From the above description it will be understood that my invention provides an improved steam belt adapted to insure an efficient flow and action of the heating gases and to maintain a maximum efficiency and uniformity of operation thereof.

I have illustrated and described a preferred embodiment of my invention as an evaporating apparatus, but it can obviously be efficiently adapted to surface condensers and similar devices.

I claim:—

1. In an evaporating apparatus, a steam belt having duplicate branch passages of progressively decreasing cross-section symmetrically arranged in said belt for directing a heating medium along branch paths of uniform length, and common inlet and outlet conduits opening into said branch passages.

2. In an evaporating apparatus, a cylindrical steam belt provided with a concentric series of steam passages of progressively decreasing cross-section, said passages communicating alternately at diametrically opposite points to provide symmetrically arranged duplicate branch passages, a common inlet for the outer branch passages of said series, and a common outlet extending from the ends of the inner branch passages of said concentric series.

3. In an evaporating apparatus, a cylindrical steam belt provided with a concentric series of steam passages of progressively decreasing cross-section, said passages communicating alternately at diametrically opposite points to provide symmetrically arranged duplicate branch passages, a common inlet for the outer branch passages of said series, a common outlet for the non-condensed gases extending across the ends of

the inner branch passages of said concentric series, and an outlet for the condensed vapors communicating with the ends of said inner branch passages.

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

ALFRED L. WEBRE.

Witnesses:

EDWARD HARE,
CAMILLE MASSON.