

(No Model.)

E. THEISEN.

SURFACE CONDENSING OR EVAPORATING APPARATUS.

No. 538,558.

Patented Apr. 30, 1895.

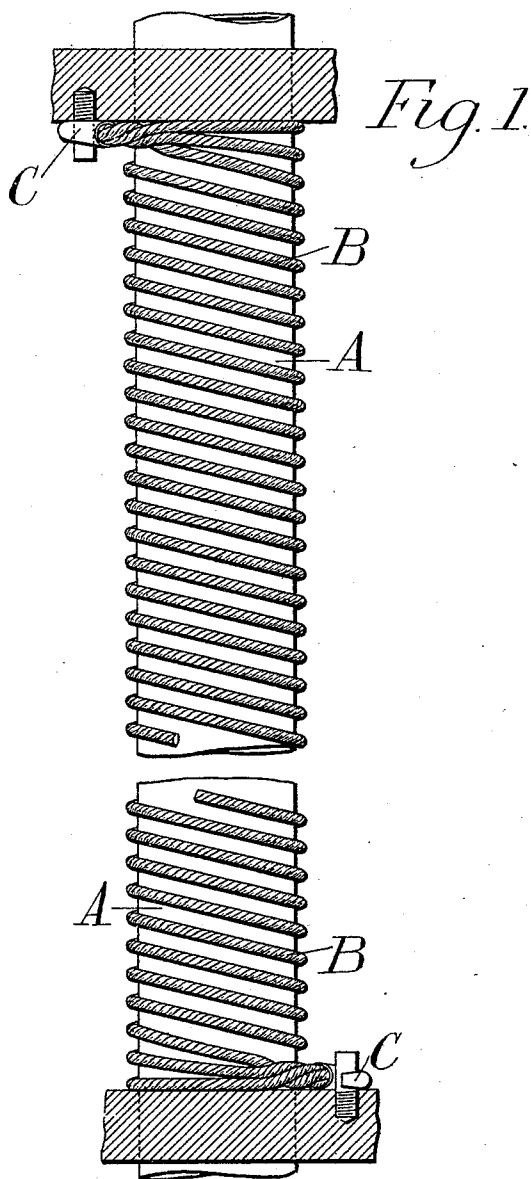
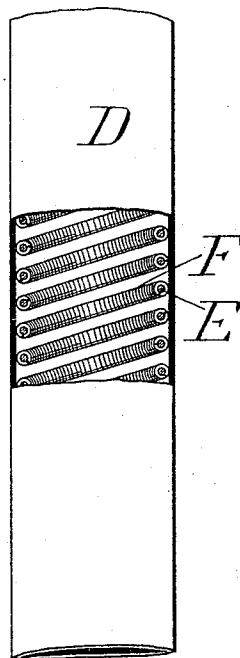


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

EDUARD THEISEN, OF BADEN-BADEN, GERMANY.

SURFACE CONDENSING OR EVAPORATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 538,558, dated April 30, 1895.

Application filed November 13, 1894. Serial No. 528,678. (No model.) Patented in Germany April 15, 1894, No. 78,860; in Belgium July 13, 1894, No. 110,965, and in France July 13, 1894, No. 234,488.

To all whom it may concern:

Be it known that I, EDUARD THEISEN, a citizen of the United States, residing at 15 Werderstrasse, Baden-Baden, in the German Empire, have invented new and useful Improvements in Surface Condensing or Evaporating Apparatus, (for which I have obtained Letters Patent in Belgium, dated July 13, 1894, No. 110,965; in Germany, dated April 15, 1894, No. 78,860, and in France, dated July 13, 1894, No. 234,488,) of which the following is a specification.

My invention relates to apparatus for condensing, refrigerating or evaporating fluids in which liquid is made to flow in a thin layer over the surfaces of tubes or cylinders, while currents of air or gas are brought in contact therewith so as to effect the evaporation of such liquid. In the specification to my Patent No. 496,757, dated May 2, 1893, I described the application to such tubes or cylinders of wires coiled helically round them, for the purpose on the one hand of causing the liquid to flow round and round the tubes or cylinders in the helical channels formed between the contiguous convolutions of the coils, and thus to insure the uniform distribution of the liquid over the entire surface of the tubes or cylinders, and on the other hand, by the capillary attraction exercised by the wire coils upon the liquid both to retard its flow and to increase its adherence to the surfaces of the tubes, so that it is prevented from being blown off the same by strong currents of air or gases. According to my present invention, in place of employing metallic wires for forming the said coils, I use cords or filaments of fibrous materials such as hemp, asbestos, and the like, preferably impregnated or coated with a suitable indurating or protective material such as paraffin, or gutta percha, so as to render them more durable, as I find that such cords or filaments are more easily coiled round the tubes than the metal wires, and yet are of sufficient durability when suitably impregnated as above; and moreover, they have the advantage of affording an increased hold on the liquid, owing to the roughnesses and interstices existing thereon.

In the accompanying drawings, Figure 1 is

a broken sectional side elevation, showing my invention applied to a tube or cylinder; and Fig. 2 is a broken side elevation of a modification.

In the drawings, Fig. 1, the letter A indicates a tube, and B cords of fibrous material coiled helically around the external surface of the tube, the ends of the cords being secured in sockets C which serve for attaching the cords to the tube plate.

In the drawings, Fig. 2, the letter D indicates a tube having an internal helical coil composed of a metal wire core E, around which is wound fibrous material F.

In some cases, more particularly when the cords or filaments are used on the inner surfaces of tubes or cylinders, I combine therewith metal wires either as a core or twisted together therewith, in order to impart greater stiffness thereto. The said cords or filaments are suitably secured at their ends to metal loops, hooks or sockets carried by the plates to which the upper and lower ends of the tubes or cylinders are fixed.

Having thus described the nature of my invention and the best means I know for carrying it out in practice, I claim—

1. In apparatus for condensing, refrigerating and evaporating fluids wherein liquid is made to flow in thin layers over the surfaces of tubes or cylinders for the purpose of being evaporated by currents of air or gases, the combination with the said tubes or cylinders of cords or filaments of fibrous material coiled helically round the same, substantially as and for the purposes set forth.

2. In apparatus for condensing refrigerating and evaporating fluids wherein liquid is made to flow in thin layers over the surfaces of tubes or cylinders for the purpose of being evaporated by currents of air or gases, the combination with the said tubes or cylinders of cords or filaments of fibrous material coiled helically round the same, said cords or filaments being treated with gutta percha, paraffin or equivalent protective substance, substantially as described.

3. In apparatus for condensing refrigerating and evaporating fluids wherein liquid is made to flow in thin layers over the surfaces

of tubes or cylinders for the purpose of being
evaporated, by currents of air or gases, the
combination with the said tubes or cylinders
of cords or filaments of fibrous material com-
5 bined with metallic wire, and coiled helically
round the said tubes or cylinders substan-
tially as and for the purposes set forth.

In testimony whereof I have signed my

name to this specification, in the presence of
two subscribing witnesses, this 25th day of Oc- 10
tober, A. D. 1894.

EDUARD THEISEN.

Witnesses:

ERNEST THERIOR,
T. KLAUSMANN.