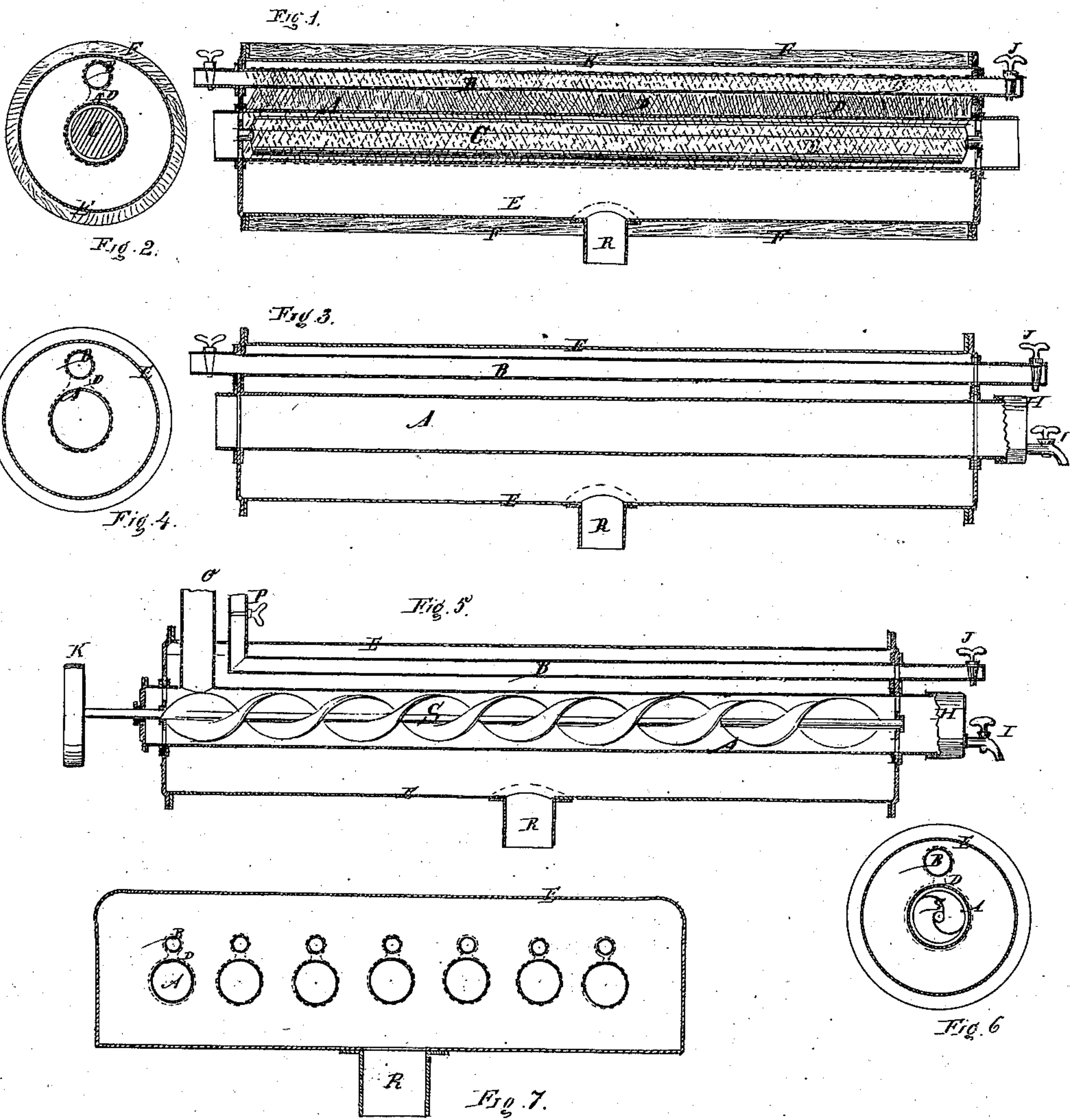


JAMES D. STURGES.

Improvement in Soap Coolers.

No. 124,457.

Patented March 12, 1872.



Witnesses:
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN SOAP-COOLERS.

Specification forming part of Letters Patent No. 124,457, dated March 12, 1872.

SPECIFICATION.

I, JAMES D. STURGES, of Chicago, in the county of Cook and State of Illinois, have made a new and useful Improvement in Soap-Coolers, of which the following is a specification:

The Nature and Object of my Invention:

My invention relates to that class of soap-coolers in which liquids or semi-fluid substances are cooled by evaporation of water or other evaporating fluids, from surfaces surrounding the material to be cooled; and it consists in surrounding said surfaces with an air-tight casing or vessel, from which the air and vapor can be exhausted to increase or heighten the vaporization and evaporation, instead of an open casing through which the air passes freely, which has been previously used; and it further consists in inclosing the said air-tight vessel or casing with wood, or other suitable non-conductor of heat.

Description of the Drawing.

Figure 1 represents a longitudinal, central, vertical section of my improved cooler; and Fig. 2, a transverse vertical section of the same; Fig. 3, a longitudinal vertical section with the interior or central core or plug C and the absorbent coating D removed. Fig. 4 is a transverse section of the same, including the absorbent coating. Fig. 5 is a longitudinal, central, vertical, sectional view, with my spirally-flanged shaft S in the cooling-cylinder. Fig. 6 is a transverse section of the same. Fig. 7 is a transverse section, showing several cooling-tubes inclosed in one air-tight case.

General Description.

A is a cooling-cylinder, constructed so as to receive the fluid or semi-fluid to be cooled at one end, and discharge the same at the other end. C is a core or plug, hung concentric with the cooling-cylinder A, and leaving a thin annular space between the two. B is a tube extending above and parallel with the cooling-cylinder A, and it is perforated with small holes, preferably in its under side. D is cloth, or other fibrous or absorbent material, surrounding the cooling-cylinder A and the tube B. E is an air-tight cylindrical casing, inclosing all the above-named parts, so that they are

inclosed in an air-tight chamber. F is a wooden or other non-conducting casing, inclosing the air-tight cylindrical casing E. The object of this exterior casing is to cover the air-tight cylinder E by a non-conductor of heat, so as to keep the inclosed parts cool, and it may be made of wood or other suitable material for that purpose. The object of the fibrous or absorbent material D, surrounding the cooling-cylinder A and the tube B, is to present a large evaporating surface around the cooling-cylinder A, and to diffuse the substance to be evaporated, to cause it to evaporate more rapidly; and in order that it may inclose said cylinder and come in contact as nearly as possible with its entire surface, it may be drawn nearly together between the cooling-cylinder A and the tube B. This absorbent evaporating surface is kept moist by admitting water or other vaporizing fluid within the tube B, and which, constantly flowing through the perforations in the bottom of said tube, spreads out in and is absorbed by the absorbent material D, and presents a large surface, from which it is rapidly vaporized and evaporated. The material to be cooled flows through the cooling-cylinder A, and if the core C is inserted in said cylinder, as shown in Fig. 1, it is spread out in a thin sheet in contact with the inner surface of said cylinder. If the core is removed, as shown in Figs. 3 and 4, the entire cooling-cylinder is filled, and if the material to be cooled is in a semi-fluid state, or if it is desirable to stir and mix it, as it is being cooled, the flanged shaft S is used in said cooling cylinder for that purpose. H is a removable cap, placed on the end of the cooling-cylinder, and I is a discharge-cock for regulating the escape of the material cooled, from the cooling-cylinder A. When it is desirable that the escape of the material from said cooling-cylinder should be free and uninterrupted, the cap H may be removed. J is a cock in the end of the tube B, for drawing the contents from the said tube, when desired. K is a pulley, rigidly attached to the end of the spirally-flanged shaft S, for revolving the same. The material to be cooled may be admitted to the cooling-cylinder A in any suitable way, through the end thereof, or by a pipe, O, opening into the side of the cylinder, as shown. P is a pipe for admitting the evaporating fluid to the pipe B, or it may be ad-

mitted at the end of the pipe B, as shown in Figs. 1 and 3.

It is apparent that the effectiveness of the cooler depends upon the rapidity of the evaporation from the absorbent material surrounding the cooling-cylinder A, and in order to cause a rapid evaporation I attach an air-pump or other suitable device to the air-tight cylinder or casing E, by means of the pipe R, for exhausting the air and vapor from the said air-tight casing. This vapor may be condensed and conducted back into the tube B, in case the evaporating fluid used is expensive; or, if not expensive, it may be disposed of in any convenient manner. It being desirable to keep the chamber in which the vaporization takes place as remote as possible from the effect of the heat of the surrounding atmosphere, the air-tight cylinder E is inclosed by a non-conductor of heat, F. In case a cooler of larger capacity than that of a single cooling-cylinder is required, several cooling-cylinders, A, may be inclosed in the same air-tight casing E, as shown in Fig. 7. In the operation of my cool-

er, it will be observed that the cooling-cylinder or vessel A remains fixed in the cooler, and the material to be cooled is simply passed through it.

I am aware of the patent No. 93,972, issued to Silas R. Divine, August 24, A. D. 1869, and specifically disclaim the construction therein shown; but—

Having described the construction and operation of my invention, what I do claim, and desire to secure by Letters Patent, is—

1. The combination of one or more fixed cooling-cylinders, A, and air-tight inclosing-case E, constructed and arranged substantially as specified.

2. I claim the combination of the cooling-cylinder A, the air-tight inclosing-case E, and the inclosing-casing F, when constructed and arranged substantially as and for the purpose specified.

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Witnesses:

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HEINR. F. BRUNS.