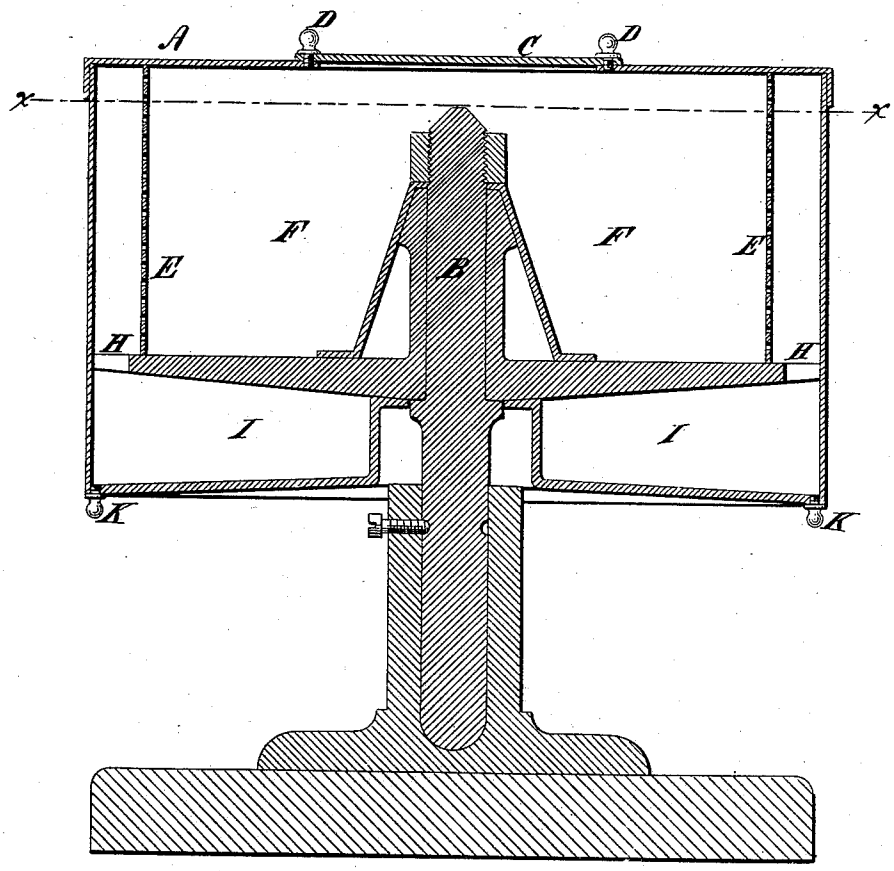
2 Sheets—Sheet 1.

O. H. KRAUSE.

Centrifugal Apparatus for Forcing Volatile or Corrosive Liquids through or from Sugar or other Substances.

No. 221,924. **Patented Nov. 25, 1879.**

Figure 1.



Witnesses:
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Geo. W. Miatt

Inventor:
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N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

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Centrifugal Apparatus for Forcing Volatile or Corrosive Liquids through or from Sugar or other Substances.

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Figure 2.

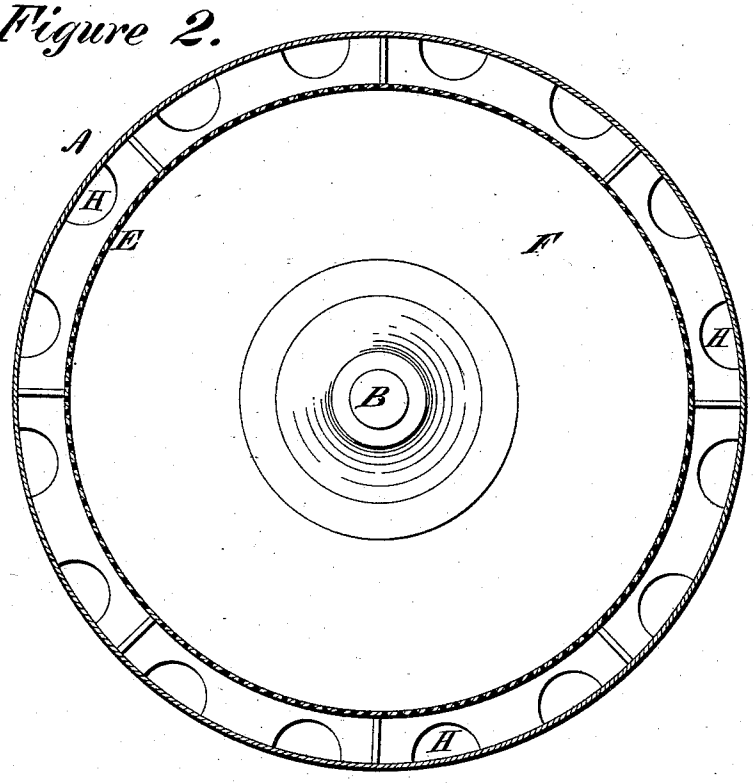


Figure 3.

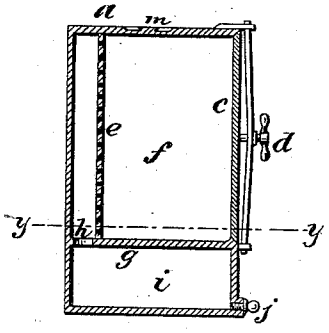
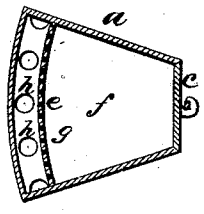


Figure 4.



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UNITED STATES PATENT OFFICE.

OTTO H. KRAUSE, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN CENTRIFUGAL APPARATUS FOR FORCING VOLATILE OR CORROSIVE LIQUIDS THROUGH OR FROM SUGAR OR OTHER SUBSTANCES.

Specification forming part of Letters Patent No. **221,924**, dated November 25, 1879; application filed August 11, 1879.

CASE B.

To all whom it may concern:

Be it known that I, OTTO H. KRAUSE, of Jersey City, New Jersey, have invented a certain Improvement in Centrifugal Apparatus for Forcing Volatile or Corrosive Liquids by Centrifugal Action Through or Separating them from Sugar or other Substances, of which the following is a specification.

My improvement relates to a modification of the centrifugal liquoring apparatus described in my pending application for a patent therefor, designated as "Case A," the purpose of which is to prevent loss or damage by the evaporation of volatile or corrosive fluids employed in liquoring sugar or other substances in the centrifugal machine, this purpose being accomplished by means of a tight chamber divided into two compartments separated from each other by a perforated vertical diaphragm and an inclined wall, whereby fluid driven out of one compartment by centrifugal force through the perforated diaphragm rises up upon the inclined wall and falls over the top thereof into the other compartment, the inclined wall acting as a dam which prevents the return of this liquid into the compartment in which the sugar and the treating-liquid were primarily placed.

My present invention consists in the employment of a tight chamber divided into two compartments, the one above the other, the radially-outward wall of the upper chamber being a perforated diaphragm. In this case the treating-fluid driven from the upper compartment through the perforated diaphragm falls by its own gravity into the lower compartment, where it is retained until it is drawn off.

My tight chamber may be sector-shaped, like the molds of a centrifugal machine, and be thus suitable for depositing in the basket of a centrifugal machine, or it may be made in the form of a drum and be mounted upon a central vertical spindle, whereby the necessary rotation may be imparted to it.

The accompanying drawings are as follows: Figure 1 is a central vertical section of my invention embodied in the form of a rotating drum. Fig. 2 is a transverse section through the line *x x* on Fig. 1. Fig. 3 is a vertical section of a sector-shaped chamber intended for deposit in the basket of a centrifugal machine; and Fig. 4 is a transverse section thereof through the line *y y* on Fig. 3.

In that form of my invention which is exhibited in Figs. 1 and 2 a drum, A, is mounted upon a central vertical spindle, B, and has at the top a central opening with a tight-fitting cover, C, which is made to tightly close the opening by means of the clamp-screws D after the sugar or other material to be treated, together with the treating-liquor, has been introduced into the central portion of the drum. Within the drum is a perforated circular diaphragm, E, the space F within the perforated diaphragm constituting the receiving-chamber for the sugar or other substance to be liquored or drained.

The floor of the receiving-chamber extends outward beyond the circular diaphragm, and is joined to the rim of the drum, that portion of it between the perforated diaphragm and the rim of the drum being perforated with the holes H, for the purpose of permitting fluid driven by centrifugal force out of the receiving-chamber through the perforated diaphragm, to fall into the collecting-chamber I underneath the receiving-chamber. The collecting-chamber is provided with faucets or plugs K, by means of which the fluid contained in it may be drawn off.

In operation the treating-liquid, which is introduced into the central portion of the drum with the sugar or other substance, is driven outward by centrifugal force through the perforated diaphragm E, and falls by its own gravity through the holes H into the collecting-chamber I, where it is retained by its own gravity until drawn off by means of the faucets or plugs K.

In that form of my invention which is exhibited in Figs. 3 and 4 my liquoring apparatus is represented in the form of a sugar-mold—that is, it is sector-shaped, and is suitable for depositing in the basket of a centrifugal machine or in a rotating drum. In this case the apparatus consists of a sector-shaped box, *a*, having its inner vertical sides, *c*, re-

movable. Clamps *d* are provided for fastening the removable side *c* to the box after the material to be treated and the treating-liquor have been introduced into the receiving-chamber *f*. The radially-outward vertical wall *e* of the receiving-chamber is a perforated diaphragm, and the bottom *g* of the receiving-chamber extends outward to the radially-outward side of the box, and is provided with the holes *h* for allowing fluid driven out of the receiving-chamber through the perforated diaphragm to fall by its own gravity into the collecting-chamber *i* in the lower part of the box. The top of the box is provided with inclined notches *m*, by means of which the box may be clutched by the jaws of suitable tongs, for the purpose of being lifted.

In operation, a series of these boxes, having been filled with sugar or other substance to be treated and charged with the treating-liquor, are placed in a circle around the outer portion of the revolving drum or basket of a centrifugal machine, and by centrifugal action the treating-fluid is driven outward from the chamber *f* through the perforated diaphragm *e*, and falls by its own gravity into the collecting-chamber *i* underneath the receiving-chamber. When the operation is completed the box is removed from the centrifugal machine, and the clamp *d* being loosened the side *c* is detached and the contents of the chamber removed. The fluid collected in the chamber *i* may then be drawn off by opening the faucet or plug *j*, or by turning the box upside down and holding it in a slightly-inclined position.

I claim as my invention, in apparatus for separating volatile or corrosive fluids from sugar or other substances by centrifugal force—

1. A box or chamber provided with a tight-fitting removable cover, and divided substantially into two compartments, one above the other, the upper compartment being of less width than the box, and having that one of its walls parallel with the wall of the box composed of a permeable or perforated diaphragm, substantially as and for the purpose set forth.

2. The cylindrical receiving-chamber F provided with the perforated rim E, in combination with the collecting-chamber I in the lower portion of the drum A, provided with the tight-fitting removable cover C, and mounted upon the vertical spindle B, substantially as and for the purpose described.

O. H. KRAUSE.

Witnesses:
H. E. NIESE,
ROB. MOELLER.