2 Sheets—Sheet 1.

A. A. GOUBERT.

DEVICES FOR COLLECTING AND SAVING PARTICLES OF SUGAR LIQUOR RISING WITH THE STEAM FROM VACUUM PANS.

No. 191,527. Patented June 5, 1877.

Figure 1.

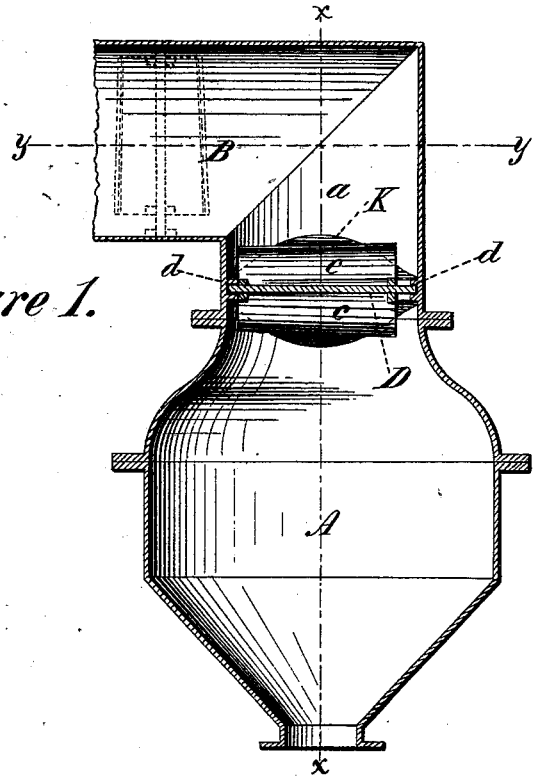
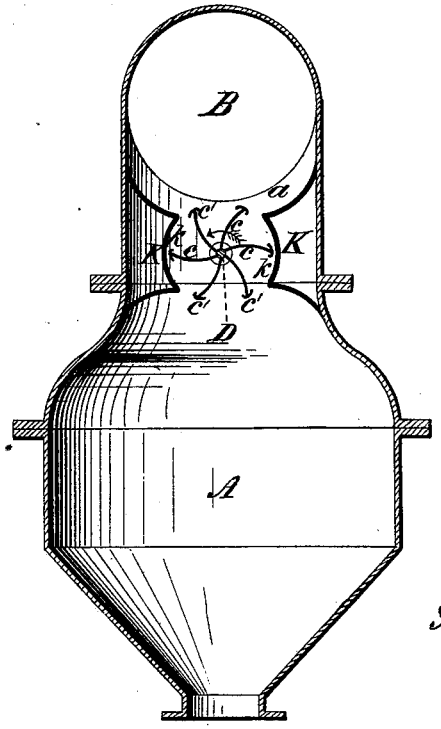


Figure 2.



Witnesses:
Edw.d Payson
Geo. H. Miatt

Inventor:
Auguste A. Goubert
Per Edw. E. Crumby,
Atty.

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

2 Sheets—Sheet 2.

A. A. GOUBERT.

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Figure 3.

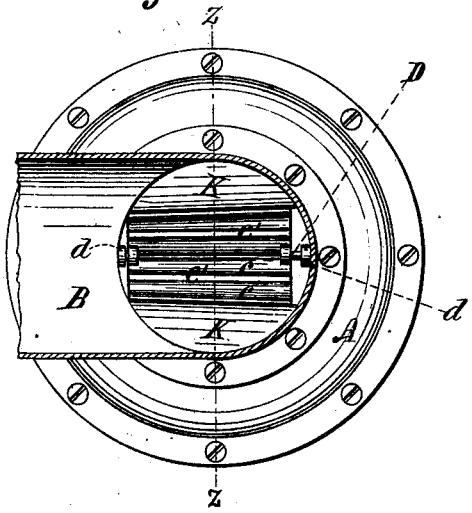
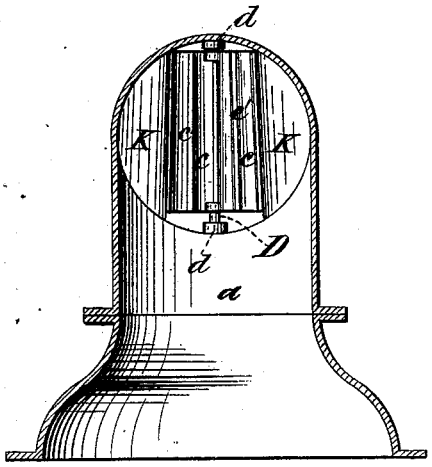


Figure 4.



Witnesses:
Edw^d Payson
Geo. W. Miatt

Inventor:
Auguste A. Goubert,
Per Edw. E. Lumby,
Atty

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

UNITED STATES PATENT OFFICE

AUGUSTE A. GOUBERT, OF NEW YORK, ASSIGNOR TO FRANZ O. MATTHIESSEN, OF IRVINGTON, N. Y.

IMPROVEMENT IN DEVICES FOR COLLECTING AND SAVING PARTICLES OF SUGAR-LIQUOR RISING WITH THE STEAM FROM VACUUM-PANS.

Specification forming part of Letters Patent No. **191,527**, dated June 5, 1877; application filed March 16, 1877.

To all whom it may concern:

Be it known that I, AUGUSTE A. GOUBERT, of the city and State of New York, have invented an Improvement in Devices for Collecting the Sugar-Liquor which Boils over from Vacuum-Pans, of which the following is a specification:

My improvement relates to that class of devices for preventing the loss of sugar-liquor from vacuum-pans in which centrifugal force is enlisted into action for the purpose of separating the drops and fine particles of sugar-liquor from the steam which is rapidly evolved and violently discharged from sugar-liquor boiling *in vacuo;* and my invention consists of a system of radially-arranged blades having the form of curvilinear planes, which are respectively affixed by one of their straight edges to a central shaft.

My blades are wider at one end than the other, and hence their outer ends are inclined to their common axis, and describe in rotation a frustum of a cone.

My invention includes the provision of troughs or gutters, in the inside of which the outer edges of the curved blades terminate.

My system of curved blades, arranged as described, compose a wheel which is so placed as to intersect the path of the current of steam and vapor discharged from the sugar-liquor in the vacuum-pan, and is made to revolve thereby.

Fine particles or drops of sugar-liquor, carried along in the current of steam, are projected against, and are caught by, the surfaces of the blades, to which they remain slightly adherent until, by the action of centrifugal force, they are carried into the troughs or gutters in which the outer edges of the curved blades terminate. As these gutters are inclined to the axis of the wheel, the liquor collected in them is forced toward the larger end of the wheel, and is thrown from the end of the gutters against the shell of the chamber in which the wheel is placed.

The accompanying drawings are as follows:

Figure 1 is a central vertical section through an ordinary vacuum-pan, and through the center of a portion of the goose-neck or chamber extending laterally from the upper part of the neck of the vacuum-pan to the condenser. Fig. 2 is a vertical section through the line *x x* on Fig. 1. Fig. 3 is a horizontal section through the line *y y* on Fig. 1. The first three drawings show my wheel mounted in horizontal bearings in the neck of the vacuum-pan. Fig. 4 is a central vertical section of the neck of a vacuum-pan through the line *z z* on Fig. 3, showing my wheel mounted upon vertical bearings in the goose-neck in the position indicated by the dotted lines in Fig. 1.

The drawings represent an ordinary vacuum-pan, A, the neck of which, *a*, communicates with the lateral chamber or goose-neck B. Figs. 1, 2, and 3 show a horizontal wheel, composed of radially-curved blades *c c c c c c*, respectively affixed by one of their straight edges to the shaft D, which is provided with the horizontal bearings *d d* on opposite sides of the neck of the vacuum-pan. The outer straight edges of the curved blades *c* terminate inside the troughs or gutters *c'*, which, it will be seen, occupy positions inclined to their common axis, by reason of the fact that the blades *c* are wider at one end of the wheel than they are at the other. That portion of the chamber in which the wheel revolves is made to partially conform in shape to the frustum of the cone described by the curved blades in their rotation, by means of the shields K K, which are affixed to the walls of the chamber, and present two concave surfaces, *k k*, each embracing about one-quarter of the wheel upon opposite sides, there being, of course, a sufficient distance between the wheel and the concave surfaces *k k* to allow the clearance of the gutters *c'* as the wheel rotates. By means of the shields K K, the entire current of steam from the body of sugar-liquor in the vacuum-pan is directed upon the wheel. As the blades upon one side of the shaft present their concave surfaces to the current, and upon the other side their convex surfaces, the effect of the upward pressure of the steam upon the wheel is to cause it to rotate in the direction

shown by the arrow in Fig. 2. Steam entering between the blades from below is thus carried around and discharged into the upper part of the neck.

In the alternative mode of arrangement shown in Fig. 4, and indicated by the dotted lines in Fig. 1, the wheel is mounted upon vertical bearings in the goose-neck, with its larger end downward. When so placed, the shields K K are correspondingly arranged in the goose-neck. In that case the horizontal current of steam causes the wheel to rotate, and the drops of sugar-liquor caught upon the blades are directed downward toward the bottom of the goose-neck by their own gravity, as well as by the centrifugal force generated by the rotation of the wheel.

I do not herein claim, broadly, the arrangement in the path of the current of steam of rotating blades; but

What I claim as my invention is—

1. A system of radially-arranged curved tapering blades, having a common axis of rotation, in combination with a corresponding system of troughs or gutters respectively affixed to the outer straight edges of the curved blades, substantially as and for the purpose set forth.

2. A wheel composed of the curved blades *c*, provided with the gutters *c'*, in combination with the shields K K, presenting the concave faces *k k*, partially embracing the wheel, and conforming to the shape of the frustum of the cone described by the gutters *c'* in their rotation upon a common axis.

3. In combination with the neck of a vacuum-pan, provided with the shields K K, a wheel, substantially such as described, having its axis of rotation extending across the opening or space in which the wheel is arranged, substantially as shown.

AUGUSTE A. GOUBERT.

Witnesses:
GEO. W. MIATT,
JOHN SHELBERGE.