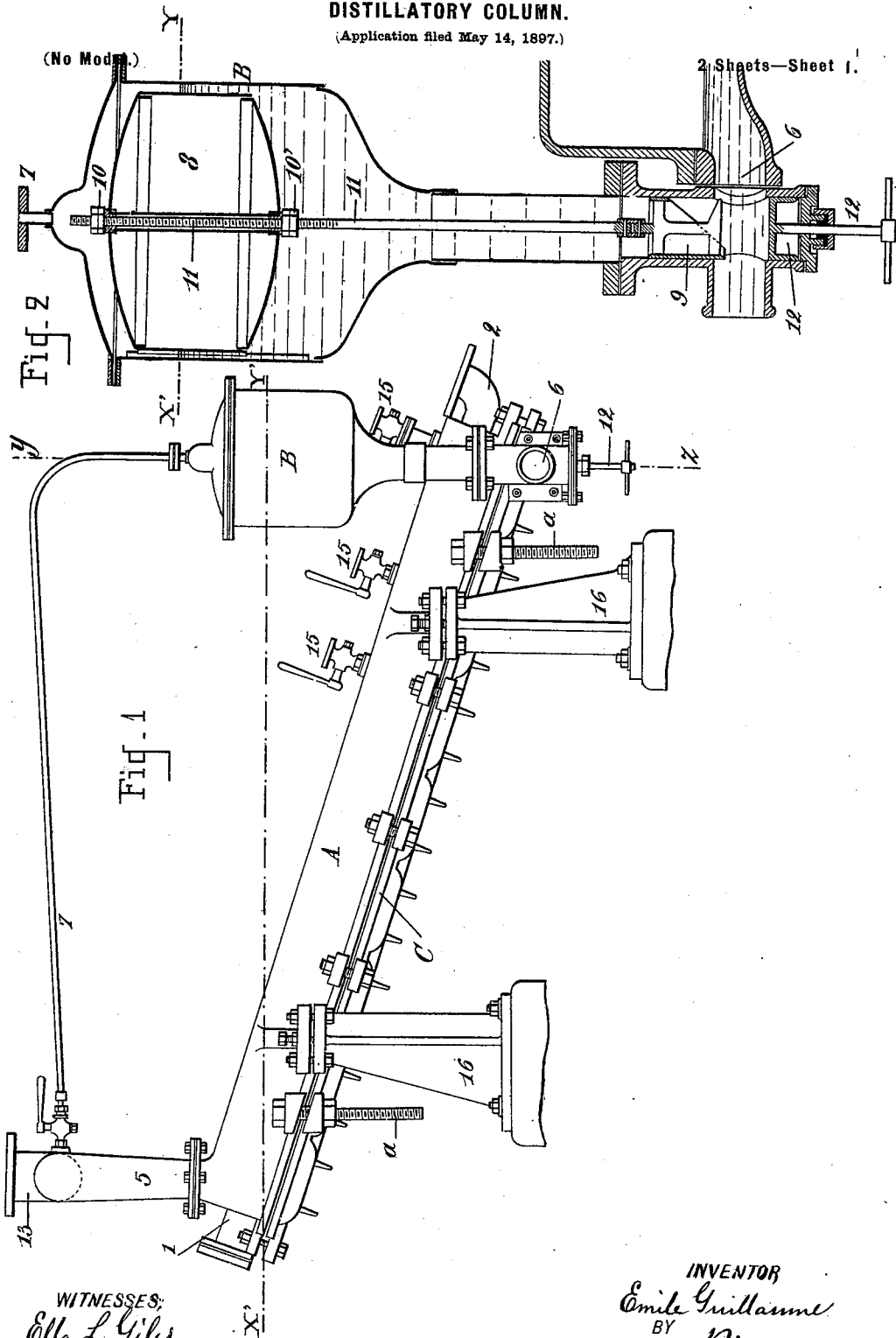


No. 631,461.

Patented Aug. 22, 1899.

E. GUILLAUME.
DISTILLATORY COLUMN.

(Application filed May 14, 1897.)



WITNESSES:
Ellis L. Giles
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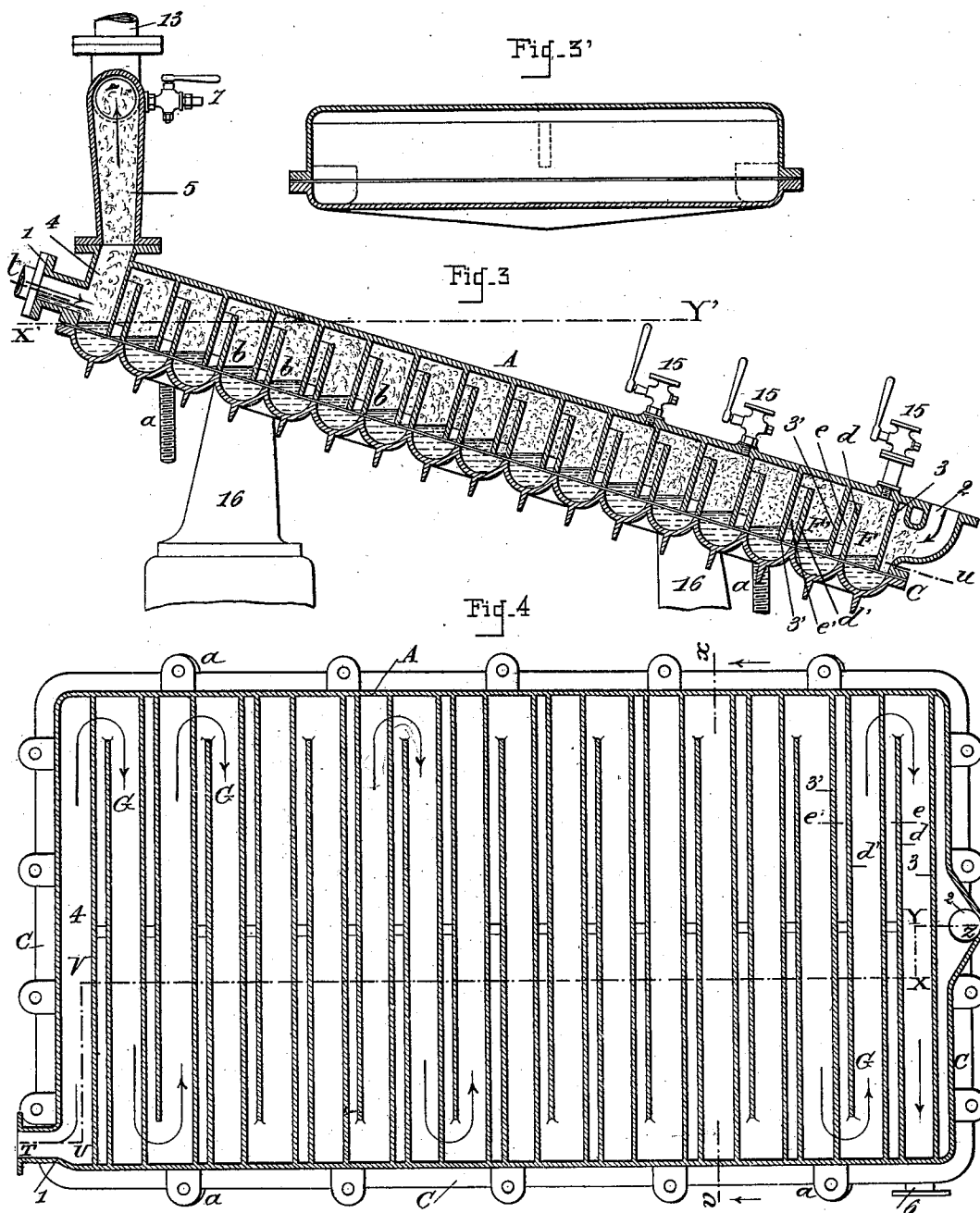
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2 Sheets—Sheet 2.

(No Model.)



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UNITED STATES PATENT OFFICE.

EMILE GUILLAUME, OF PARIS, FRANCE.

DISTILLATORY COLUMN.

SPECIFICATION forming part of Letters Patent No. 631,461, dated August 22, 1899.

Application filed May 14, 1897. Serial No. 636,535. (No model.)

To all whom it may concern:

Be it known that I, EMILE GUILLAUME, a citizen of the French Republic, and a resident of Paris, France, have invented certain new and useful Improvements in Distillatory Columns, of which the following is a full, clear, and exact specification.

My present invention relates to an improved distillatory column designed for the distilling of both clear and thick meshes. I shall describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the body of the distillatory chamber with its wash-extractor. Fig. 2 is a sectional view, on an enlarged scale, along the line *y z* of Fig. 1. Fig. 3 is a section of the distillatory column on line *T U V X Y Z* of Fig. 4. Fig. 4 is a section on line *t u* of Fig. 3. Fig. 3' is a view in cross-section of the column along the line *v x* of Fig. 4, looking in the direction of the arrow.

The same reference letters and numbers represent the same elements in the various figures.

The body of the distillatory chamber *A* is constructed either of copper or (preferably) of cast-iron. It consists of an inclined bottom on which the meshes to be distilled which arrive through the pipe *I* circulate alternately from right to left and from left to right without meeting with any resistance in their descent to reach the last compartment at the base of the chamber.

The heating-steam is supplied through the pipe 2 and passes from compartment to compartment under all the walls 3 3', &c., on its way to reach the upper compartment 4, from which it passes into the dome 5, which serves as a scum-collector.

When the meshes are spent—*i. e.*, when the alcohol has been exhausted from them and they have reached the lower compartment—they are extracted from the distillatory chamber uninterruptedly by passing through the pipe 6 by means of an extractor *B*, which is shown in detail in Fig. 2. The upper part of this extractor communicates by the pipe 7 with the dome 5 of the distillatory chamber. The extractor consists of an upper receptacle provided with a float 8, which operates, by means of a rod 11, a sliding valve

9, which serves to effect the discharge of the spent meshes. Owing to the communication by pipe 7 the equilibrium of pressure is maintained between the receptacle of the float 8 of this extractor and the dome 5 of the distillatory column, so that the liquid contained in the distillatory chamber, which meets with no obstacle against its discharge, (except the agitation by the steam at the surface of the liquid in each compartment,) will tend to rise in the extractor to the same level *X' Y'* as that in the upper compartment in the distillatory chamber. Hence when this level rises the float 8 is raised an equal amount and the latter, lifting the slide-valve 9, uncovers proportionately the opening for the escape of the spent meshes of the column. If, on the contrary, the level sinks in the compartment of the distillatory column, it also sinks in the extractor, the float falls and likewise moves the slide-valve 9, which closes the discharge-opening for the spent meshes proportionally. It will be readily understood that the function of this extractor insures entirely a normal level for the meshes in the distillatory columns.

By means of the nuts 10 and 10', threaded on the rod 11, the height of the float, and consequently the height of the meshes in the column, can be increased or decreased. Moreover, the arrangement of the slide-valve 9 is such that with the concussion experienced by the float, and consequently by the slide itself, no deposit can collect in the neighborhood of this slide-valve in action. Finally, 12 is a piston-like arrangement by means of which the combination of float and slide-valve may be raised by hand or whatever deposit may have gathered at that part of the apparatus after a stop may be stirred up.

Figs. 3 and 4 indicate clearly the circulation of the liquid, the circulation of the steam, the condition of each compartment in normal action, the ingress of the meshes to be distilled, the egress of the meshes after alcohol exhaustion, the admission of the heating-steam, the egress of the alcoholic vapors 13, traveling either to the condensing warming apparatus or to the high-grade concentration-column, and, finally, Figs. 1 and 3 show the pipe 7, which communicates with the top of the extractor *B* for the spent meshes.

In the operation of the apparatus the heating-steam arrives in the first compartment through pipe 2 in front of the first diaphragm 3 and passes under this diaphragm on the whole breadth of the chamber A. It bubbles in the passage through the liquid at the other side of the first diaphragm 3 and passes into the steam-chamber F under the wall *d*, covering again the whole breadth of the chamber A. Then it descends into the space *e* between the two walls *d* and 3' and enters into the second mash-circulation department. It also passes under the wall 3' on the whole breadth, bubbles in the liquid behind it in its passage, reascends into the steam-chamber F in order to pass over *d'*, descends again into the third compartment, and so on. As to the meshes to be distilled, their circuit is clearly indicated by the arrow G in Fig. 1.

The drawings also set forth the mode of securing the joints.

a a a are bolts by means of which the column can be dismounted very rapidly, (because there is only one principal joint,) thus making it possible to get at the inside in case of need. The valves 15 for the steam-ports from the corresponding compartments are intended for the purpose of insuring the degree of alcohol-exhaust from the meshes while they are distilled gradually as they descend in the column.

This distillatory apparatus works both as a column with mash-filling and as a shelf or chamber column, the charging or enriching of the alcoholic vapors taking place very gradually, while the liquid becomes gradually poorer in its descent from compartment to compartment. Moreover, there is a steam-chamber in each compartment, which may be made as large as desired by increasing accordingly the height of the upper part above the joint C. As a matter of course the propor-

tions of this column will vary with the varying requirements. As shown, it is supported by cast pieces 16, (shown in the drawings;) but this supporting arrangement can be modified as desired. The important point is that the bubbling (steam-clearing) lines be horizontal and that the slope of the system be sufficient to obtain the required fall of each bubbling-diaphragm. It will, moreover, be seen at once that this incline can be modified to obtain the slope or fall which is deemed to be most favorable in each case.

It is important to observe that the slope of the bubbling-diaphragms can be modified even during the work by employing a regulation of the supports by screws or otherwise, so that the incline of the system can be varied.

I claim—

In a distilling apparatus, an inclined distillatory chamber having a plurality of baffle-plates designed to cause a zigzag flow of the mash, means for supplying the mash to the upper end of said chamber, an exit-dome for the vapors from said upper end, a division-wall depending into each compartment formed by said baffle-plates, said walls depending below the mash-level in the respective compartments, a steam-supply at the lower end of said chamber, an outlet from said chamber for the meshes, an extractor-chamber connected therewith and having pipe communication with the said exit-dome, a valve governing the discharge of the mash, and a float in the extractor-chamber for automatically operating the valve, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

EMILE GUILLAUME.

Witnesses:

EDWARD P. MACLEAN,
JULES FAYOLLET.