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ARCHIBALD K. LEE, OF GALVESTON, TEXAS.

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IMPROVEMENT IN RECTIFYING HIGH-WINES.

The Schedule referred to in these Letters Patent and making part of the same.

I, ARCHIBALD K. LEE, of Galveston, Texas, have invented an Improved Mode of Rectifying High-Wines or Spirits, distilled from grain or any other materials from which they are made, of which the following is a specification.

My mode of rectification involves the use of an apparatus which, although composed of elements or parts that, separately considered, may not all be new, yet presents as a whole a novel combination and arrangement, whereby I secure, among others of minor importance, the following economical advantages:

I am enabled to make far better spirits than can be done by any other known process or means, and at comparatively much less cost, because my apparatus is more compact, and therefore requires less room or space than any other rectifying apparatus in existence of the same capacity or power; because, further, it provides a very great increase of rectifying surface as compared with any other apparatus, requires less cost and labor, and is more durable than any hitherto devised. It is, moreover, infinitely superior in cleanliness of operation to any other apparatus, and when it does become foul, which scarcely ever can occur within a period less than one year, it can be thoroughly cleansed and repacked in three hours' time or less; whereas, it is well known most rectifying establishments need to be cleansed every week to secure good results.

Furthermore, my invention guards against any possible chance of loss from evaporation, leakage, or waste of any kind, because the tubs are comparatively air-tight, and, therefore, the rectification throughout the whole process is carried on in vacuum, which characteristic features effectually prevent the evaporation, which in all other methods hitherto known have been an inseparable and most annoying accompaniment of the process of rectification.

But my apparatus will be more easily understood by reference to the drawing, which presents at—

Figure 1 a side elevation of it, and at

Figure 2 a vertical section through the center of one of my rectifying-tubs.

On the drawing the letter A marks the receiving-tub for the spirits to be rectified, in which the opening through which the same is poured in is provided with an air-tight cover, *a*, so contrived as to be readily moved at intervals, as the process goes on, to permit an ingress of air, so that no resistance to the pumping up of its contents through a pipe, B, into the distributing-tub C may result from the vacuum, which otherwise would be produced by this operation. The cover *a* being air-tight when in place, obviously prevents loss from evaporation.

My rectifying-tubs, of which there are four in num-

ber, are placed in relation to the distributing-tub C, and to each other, substantially as shown on the drawing, and numbered, in the order in which they stand with respect to said tub, No. 1, No. 2, No. 3, and No. 4, as seen.

No. 1 is placed several feet below the distributing-tub; No. 2 a little below No. 1; No. 3 the same distance lower than No. 2; and No. 4 equally lower than No. 3, so that the liquid flowing from the distributing-tub through all four of these rectifying-tubs will descend with an accelerating, hydraulic power from No. 1 to and through No. 4, and therefore pass more and more rapidly through the rectifying substance in the different tubs as the purification approaches nearer and nearer to completion.

The distributing-tub C is connected to rectifying-tub No. 1 by a single pipe, D, in which there is a stop-cock, *b*, to regulate the flow of the liquid, or to cut it off altogether if occasion should require it.

On the other hand all the rectifying-tubs are connected, each with the next below it, by two pipes *c* *d*, all of which are provided with stop-cocks.

The pipes *d* are the conduits proper for the liquid after it has passed through the rectifying substance in No. 1, from or near the bottom of one tub into or near the top of the next succeeding one, and so on through the series, the more effectually to secure the passage of the liquid through the rectifying substance in Nos. 2, 3, and 4.

The pipes *c* are mere waste-pipes, to carry off any excess of liquid from one tub to another, and are most of the time closed, by means of the stop-cocks in them.

Each rectifying-tub is provided with a glass indicating-tube, *i*, and a stop-cock, *o*, the former to show the precise height of the liquid, and the latter to draw off any surplus that may remain in the several tubs after the process of rectification is completed.

From No. 4 the liquid, now thoroughly rectified, passes through a pipe, E, into the recipient F, from which it is drawn into barrels or other vessels by means of a stop-cock, *g*.

The stop-cock *o*, employed in connection with tub No. 4, is connected with a pipe, G, in order that any excess of liquid remaining in this tub, which, of course, will be rectified, may be drawn into the recipient F.

All the tubs are likewise provided with a pipe, H, as shown in No. 4 of fig. 1 and fig. 2, so constructed that an air-pump may be connected with it, for the purpose of exhausting the air from the rectifying-tubs and producing a vacuum therein before the process of rectification is commenced.

A stop-cock, *h*, closes this pipe whenever it is not in use.

The recipient F is placed in a waste-pan J, from which a pipe, K, leads into the receiving-tub A, for the purpose of conveying any spirits accidentally spilled in withdrawing it from the recipient F, and thereby be saved from waste.

The internal construction of my rectifying-tubs is peculiar.

I provide in them two open spaces, L and M, the latter at the bottom and very much shallower than the former. The rectifying substance N is placed between these open spaces and protected or kept in place, above and below, by perforated metallic diaphragms P S.

To prevent the buoyancy of the material of which the rectifying substance is composed from lifting the diaphragm P out of place and becoming thereby too much loosened, I employ two wooden transverse bars

K T, between which I place a vertical brace or stanchion, W, as shown on the drawing at fig. 2.

To make the rectifying-tubs air-tight, the covers V are all accurately fitted on them, and maintained in place by means of screw-bolts X, passing through them, and through lugs projecting outside the tubs, near their tops, as shown also at fig. 2.

What I claim is—

The receiving-tub A, the distributing-tub C, and the rectifying-tubs 1 2 3 4, having a pipe, H, attached, each being constructed as stated, and so combined and arranged as to furnish a vacuum apparatus for the rectifying of high-wines or other like product of distillation, substantially as described.

Witnesses:

ARCHIBALD K. LEE.

H. J. DUSSOR,

E. H. LEVY.