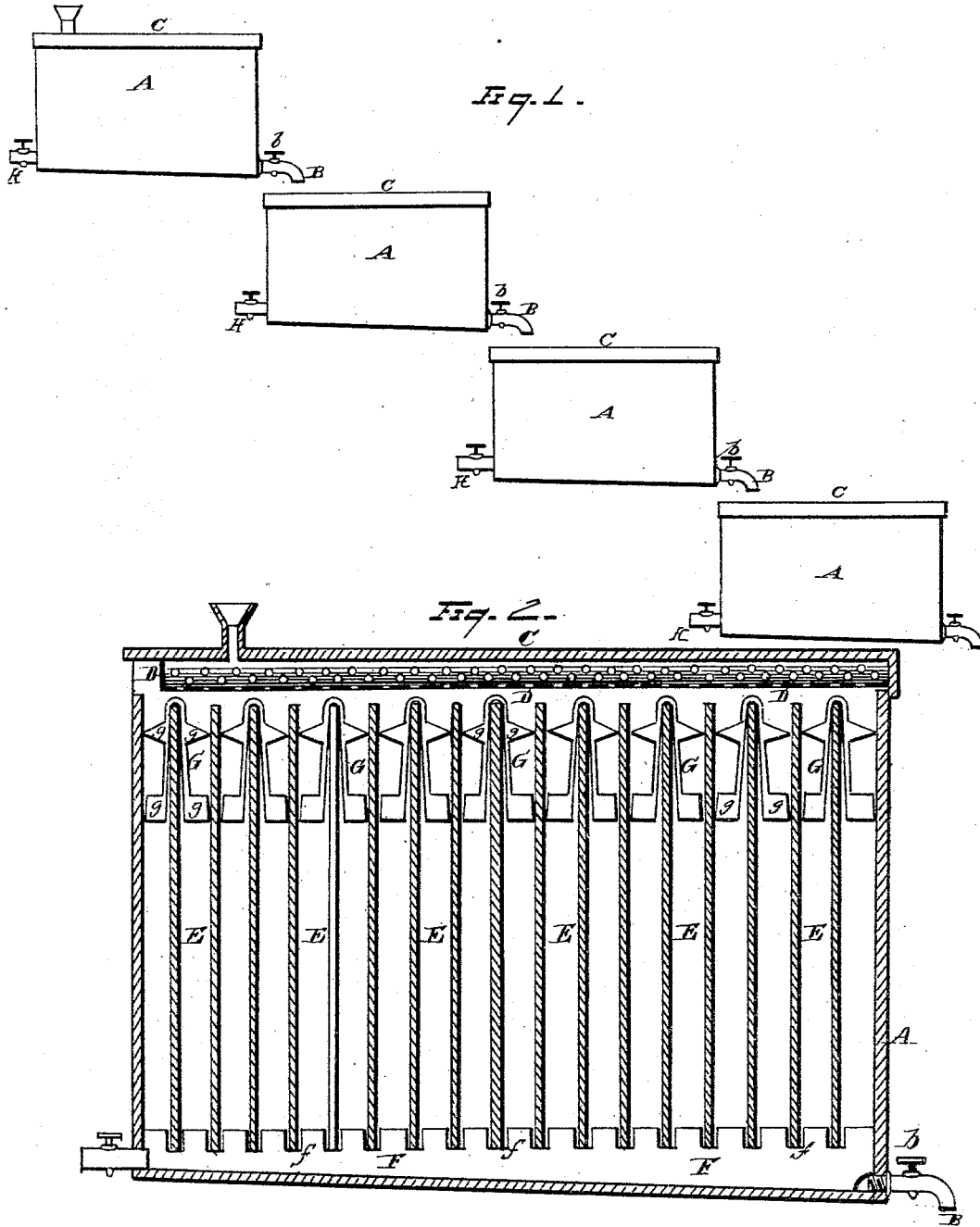


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Process and Apparatus for Aging and Improving
Distilled Liquors

No. 210,863.

Patented Dec. 17, 1878.



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Fig. 3.

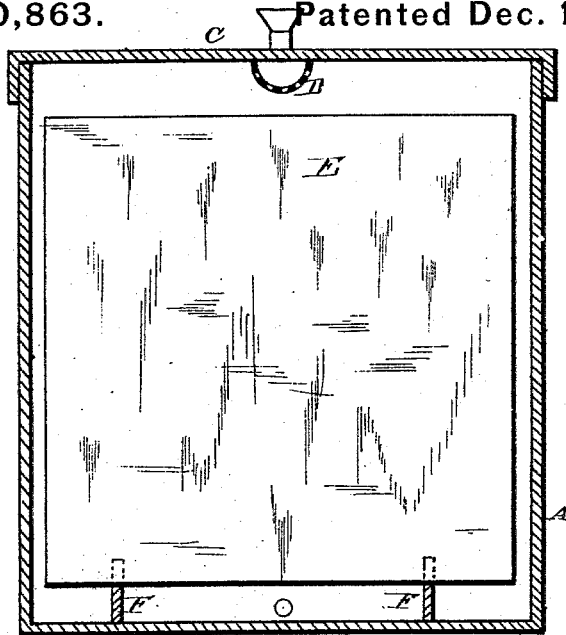
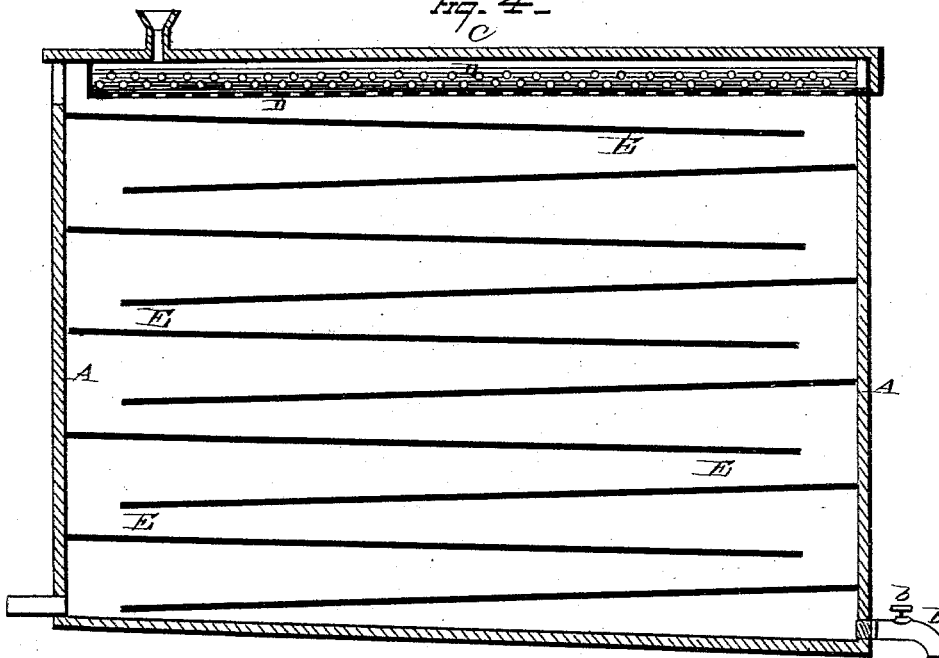


Fig. 4.



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MAX LANSBURGH, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN PROCESSES AND APPARATUS FOR AGING AND IMPROVING DISTILLED LIQUORS.

Specification forming part of Letters Patent No. **210,863**, dated December 17, 1878; application filed July 17, 1878.

To all whom it may concern:

Be it known that I, MAX LANSBURGH, of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Processes and Apparatus for Aging and Improving Distilled Liquors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to processes for the aging and improving of alcoholic distilled liquors.

The processes for aging liquors concern the treatment thereof relative to the fusel-oil which is contained in the same, and although different liquors materially vary from each other in the quantity and quality of their respective fusel-oils, yet all of them depend upon the latter for their flavor. It is well known that spirits rectified and redistilled do not improve in time, and that this is attributed solely to the absence of their fusel-oils previously taken from them by the process of rectification.

Since the fineness of fusel-oil gives to liquors their desirable flavor, it follows that a treatment which will render the fusel-oil finer and more improved will proportionately improve the liquors.

Heretofore the several processes having this end in view have either agitated the liquors by forcing a current of air through them, or have heated and at the same time set the barrels or other receptacles containing the liquor into motion.

My invention consists, first, in the process of flavoring liquor, consisting in subjecting the same to the aromatic vapors resulting from the action of air upon fusel-oil; secondly, in the process for flavoring and improving liquor, consisting in subjecting it to the aromatic vapors resulting from the action of air upon fusel-oil, and simultaneously separating therefrom a portion of its own fusel-oil; thirdly, in the process for aging and improving alcoholic liquors, consisting in passing liquor successively through a series of tanks provided with suitably-extended surfaces for collecting fusel-oil thereon, and alternately with said succes-

sive charges passing a current of warm air up through said tanks, whereby the fusel-oil collected on said surfaces is aromatized and incorporated into the next successive charge of liquor.

Each of these charges passes its liquor in continuous stream from the time of its entrance into the first or upper tank until the same is discharged from the last or lowest tank in the series. But the time intervening between any two consecutive charges is of much longer duration, since the fusel-oil must be duly evaporated and prepared to be incorporated into the next following charge of liquor. Thus it may require from two to six hours, or a time varying with the size of the tank, to cause the desired evaporation, it being understood that after one charge is passed through the series of tanks the spirits which have adhered to the collecting-surfaces of each tank will drip down from said surfaces, and, after passing through the respective tanks below the same, will be discharged from the lowest tank.

Communication having been made with the tanks, so as to cause warm air to pass up through the same after the charge of liquor is passed out of them, the process of drying and evaporating the fusel-oil deposited on the collecting-surfaces in said several tanks takes place. After this drying and evaporating process has been sufficiently carried on, so that the aromatic vapor of the fusel-oil is ready to be taken up by the next following charge of liquor, the latter is passed through said series of tanks.

This process causes the liquor to be subjected to as many successive treatments as may be desired in order to produce the required smoothness and fineness, each of said treatments serving to incorporate into the liquor the aromatic vapor obtained by treating the preceding charge, and also serving to separate therefrom a portion of the fusel-oil contained in liquid state in its own volume, whereby the next succeeding charge may have the advantage of the aromatic vapors obtained from the same.

The invention further consists of the mechanical devices employed to carry out this process, as hereinafter described and claimed.

In the drawings is represented said system

of mechanical devices, of which Figure 1 is a view in vertical elevation. Fig. 2 is a view in vertical longitudinal section of one of the several tanks composing said system. Fig. 3 is a transverse vertical section of Fig. 2. Fig. 4 is a view illustrating a modified manner of providing the tanks with collecting and vaporizing surfaces for the fusel-oil.

A series of tanks, A, in any desired number, are placed in different horizontal planes, one above the other, and connected by suitable intermediate pipes B. These tanks may be of any form and material desired, and the manner of connecting the same may be varied. Preferably, however, they are made of wood lined with copper, which is tinned on its exposed side. Each tank is provided with a cover, C, provided with a perforated delivery-pipe, D, secured to the central longitudinal portion of its lower side, and having communication with the filling or connecting pipe by means of a suitable opening in said cover.

The body of each tank is filled with a series of glass plates, E, placed vertically therein, and preferably of size relative to the tank, such that a space is left between the same and the walls of the tank.

These plates are supported upon suitable metallic strips F, running the length of the tank, and provided with vertical recesses or openings *f*, in which said plates are respectively fitted. The upper bodies of the plates are maintained in proper relative position by separating devices G, which are of inverted U shape, and provided with horizontal studs or projections *g*. These separating devices are hung over the tops of alternate plates, and are adapted to prevent the several plates from displacement by bearing horizontally against the studs formed thereon. Both these separating devices and the supporting-strips upon which the several plates rest are preferably made of metal, brass being very good. The reason of this is that wood would absorb the spirits and interfere with the aromatizing of the fusel-oil.

I prefer glass plates as constituting the collecting and aromatizing surfaces for the fusel-oil, the same being durable in wear, cheap in cost, and on account of the fact that after they are through their use in this connection the same plates may be used for any of the ordinary purposes to which glass is applied; but especially is glass preferable by reason of its density and its imperviousness to liquids of any kind, so that it does not absorb or take into its surface any fractional part of the spirits in which it is submerged. However, if desired, any other similar material may be substituted for glass. Thus sheets of tinned copper, block-tin, or glazed pottery, may be used. It is evident that these several series of plates respectively provide a very large area for collecting and aromatizing the fusel-oil contained in the liquor, which is passed through the tanks. If desired the glass plates may be

roughened or corrugated, which would add largely to the working-surface of the same.

The bottoms of the tanks are formed in horizontal inclination adapted to cause the liquors to flow from the same into the exit or connecting pipes B. Suitable stop-cocks *b* may be provided in these pipes to regulate the discharge of the tanks. As soon as the liquor has been drawn from a tank to allow the warm air to strike over the fine films of fusel-oil I withdraw the covers C partly or entirely. These covers are to prevent the evaporation of liquor, and may be made of fine-meshed wire-cloth, with the perforated delivery-pipe, if so desired.

A pipe or conduit, H, suitably connected with each tank, and having a stop-cock, provides means whereby air warmed by natural or artificial heat can be introduced into the tank after the spirits are discharged therefrom, and which operates to vaporize the fusel-oil deposited on the collecting-surfaces thereof. I prefer to use a hose or pipe in this connection to force a current of air up through the tanks by means of bellows or similar devices, but may dispense with the same, and permit ordinary atmospheric air to voluntarily pass through the tanks when the same is of sufficient heat.

In order to allow the air to circulate through the tanks and pass out of the same, any suitable opening may be provided. Preferably one of the ends of the cover is formed without a downwardly-projecting flange, which furnishes ample openings for this purpose. As the liquor is introduced into the tanks it falls in the form of spray or drops from the perforated delivery-pipes regularly upon the collecting-surfaces, and is thus thoroughly subjected to the treatment of the fine aromatic vapors which are arising therefrom. The spray also washes down the aromatized oil which adheres to the collecting-surfaces of each tank. This aroma or fragrance is absorbed or taken up by the liquor, and thus the aromatized particles of the fusel-oil left from the former charge become incorporated with this succeeding charge.

After each charge of liquor is passed through the series of tanks the collecting-surfaces of the latter will drip with such portion of the liquor as may have adhered thereto during such passage of the main volume of the charge; but the same gradually passes off, and is discharged from the lowest tank. Due communication being made with the tanks after the passage of each charge of liquor, warm air is passed by any suitable means up through the same, and the process of drying and evaporating the fusel-oil deposited on the collecting-surfaces commences.

The process of passing each charge of liquor through the series of tanks is continuous and of short duration; but the intervening process of passing warm air up through the same is of longer duration, and may require from two

to six hours, or other duration of time, the same varying with the size of the tanks and attendant conditions.

As before stated, various changes can be made in the construction of the tanks, and, instead of having plates of glass, glass bottles may be substituted, the same having their bottoms removed, and in all instances care should be exercised that no place or opportunity is given for any portion of the spirits to remain in a tank after the same is emptied of its main volume.

In Fig. 4 of the drawings is shown a modification of the manner in which the collecting and aromatizing surfaces for the fusel-oil are arranged. Instead of being vertical they are placed horizontally above each other, with alternate end openings between them, and adapted to cause the liquor to pass from one down onto the plate next below after traversing the length of the same.

The tanks while in use, preferably, should be subjected to heated air of a regular degree of summer temperature, varying from 75° to 100° Fahrenheit.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In the aging of liquors, the process of flavoring the same, consisting in subjecting liquor to the aromatic vapors resulting from the action of air upon fusel-oil, substantially as set forth.

2. In the aging of liquors, the process for flavoring and improving the same, consisting in subjecting liquor to the aromatic vapors resulting from the action of air upon fusel-oil and simultaneously separating therefrom a portion of its own fusel-oil, substantially as set forth.

3. The process for aging and improving alcoholic liquors, consisting in passing liquor successively through a series of tanks provided with suitably-extended surfaces for collecting fusel-oil thereon, and alternately with said successive charges passing a current of warm air up through said tanks, whereby the fusel-oil collected on said surfaces is aromatized and incorporated into the next succeeding charge of liquor, substantially as set forth.

4. An apparatus for aging liquors, consisting in the combination of a series of tanks

placed in regular series in different horizontal planes, and having communication with each other, the same being respectively provided with vertical plates for collecting the fusel-oil from liquors, substantially as set forth.

5. In an apparatus for aging liquors, a tank provided with a series of vertical plates which collect the fusel-oil, in combination with devices supported upon the top edges of alternate plates and formed with lateral studs to maintain all the plates in proper vertical position, substantially as set forth.

6. In apparatus for aging liquors, the combination, with a tank, of a series of vertical plates fitted therein and suitable means for supporting said plates above the tank-bottom, whereby a space is formed between the lower edges of said plates and the tank-bottom, substantially as set forth.

7. In apparatus for aging liquors, the combination, with a tank, of a series of vertical plates located therein and longitudinal metallic supports provided with transverse recesses, in which said plates fit in vertical bearing, substantially as set forth.

8. In apparatus for aging liquors, the combination of a series of tanks located in different horizontal planes and formed with inclined bottoms, said tanks being connected together by suitable pipes, substantially as set forth.

9. In apparatus for aging liquors, a tank provided with plates for collecting fusel-oil, in combination with a removable cover having a perforated delivery-pipe secured to the longitudinal central portion of its under side, substantially as set forth.

10. In apparatus for aging liquors, the combination, with a tank formed with openings at its top and bottom for permitting of the passage of air through the same, of a series of vertical plates supported in raised position from the tank-bottom and separating devices for maintaining the upper bodies of said plates in proper relative position, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of July, 1878.

MAX LANSBURGH.

Witnesses:

FRANK GALT,
A. W. BRIGHT.