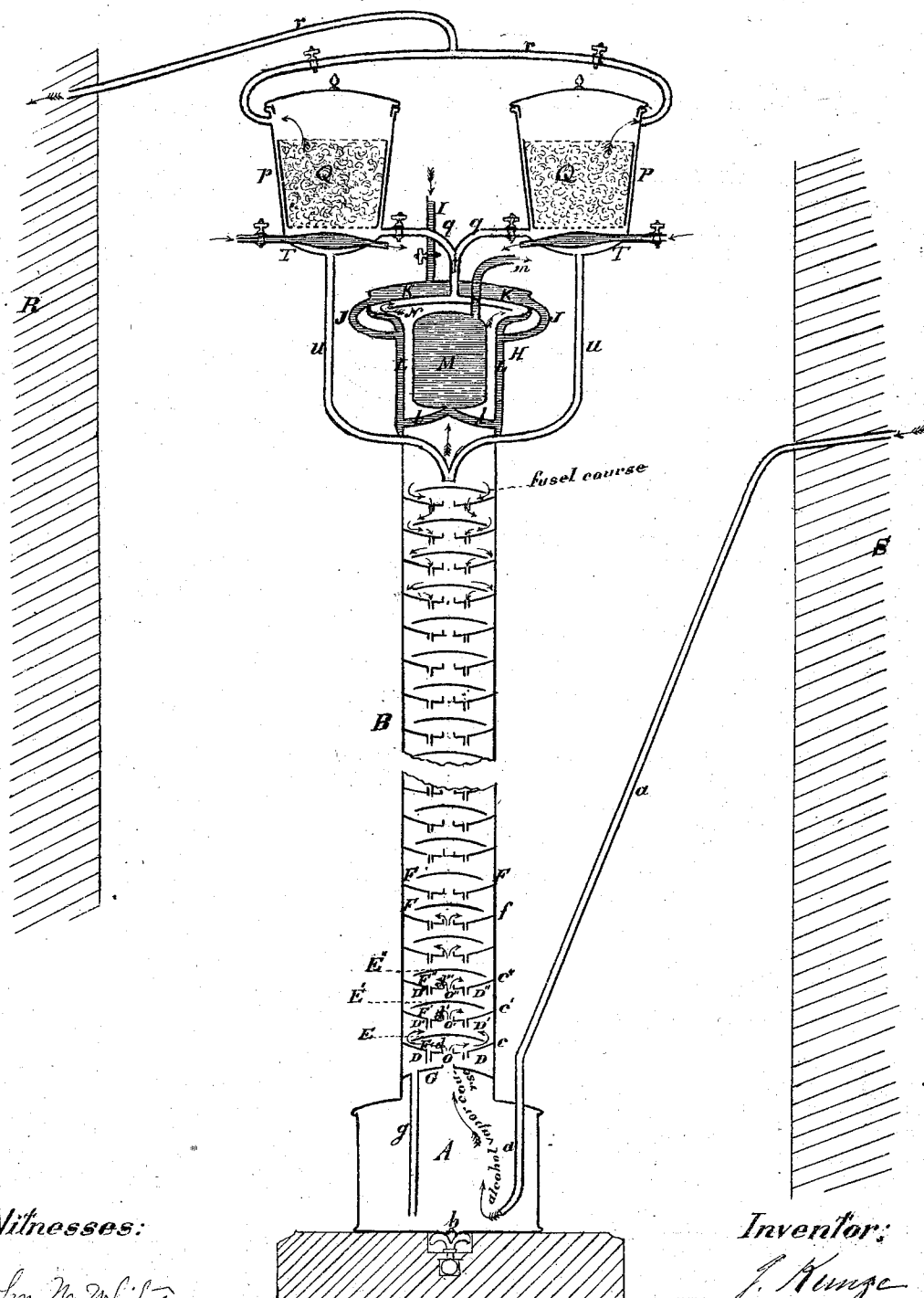


J. KUNZE.
Improvement in Distilling Apparatus.
No. 125,463. Patented April 9, 1872.



Witnesses:

John N. Whitney
Phil. F. Dodge

Inventor:

J. Kunze
by Dodge & Munn
his attys.

UNITED STATES PATENT OFFICE.

JULIUS KUNZE, OF CHATSWORTH, ILLINOIS.

IMPROVEMENT IN DISTILLING APPARATUS.

Specification forming part of Letters Patent No. 125,463, dated April 9, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JULIUS KUNZE, of Chatsworth, in the county of Livingston and State of Illinois, have invented certain new and useful Improvements in "Distillation;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

The accompanying drawing represents a vertical section of the apparatus.

The object of my invention is to produce, by ordinary distillation, high wines or alcohol free from fusil or other disagreeable essential oil, and of any desirable strength. The nature of my invention consists in the novel construction and arrangement of certain devices in an apparatus, as hereinafter described and claimed.

My mode or method of purification of the alcohol vapor as it comes out of the still mixed with fusil or other essential oil vapor and aqueous vapor, and before it goes to the condenser, consists in subjecting the said vapor to a great mechanical friction and concussion, and lowering gradually its temperature, thereby condensing a considerable quantity of oil vapor and aqueous vapor, and thus separating the same from alcohol vapor; then in suddenly lowering the temperature of the said vapor to such an extent as to precipitate or condense the whole of the oily or aqueous vapor, or the most of it, and return the same back to the still without condensing the alcohol vapor; and finally in purifying the alcohol vapor from yet remaining traces of oily vapor or other impurities, by charcoal, before it is condensed and turned into high wines or alcohol.

The apparatus to perform all the above said operations is made of copper, and placed between the still S and condenser R of the distillery. It is placed on a suitable foundation, and consists of several parts put up in the shape of a column, although any other suitable shape may be adopted.

A is a vessel or holder, connected with still S by pipe *a* to let in the alcohol vapor; also

provided with faucet *b* to return the condensed oil or water back to the still S. B is a column of any suitable size, divided by partitions into chambers. Partitions C C' C'' are of dish-form, of the same diameter as the column, and secured to its walls. They are provided with openings *o o' o''*, for vapors to freely ascend, and with rims or borders *d d' d''*, to prevent the condensed oil and water from passing through openings *o o' o''*, but to collect the same and pass them down through the pipes D D D' secured to the said partitions. Partitions E E' E'' are of the shape of an inverted dish, for the purpose of easily conveying the drops of oil and water down, are of smaller diameter than column B, and are secured to the same by strips or staples *f*, leaving space F between walls and partitions open. The alcohol vapor mixed with oily and aqueous vapors goes from the still S into vessel A, and from there ascends through opening *o*, spreads out right and left, goes around partition E, again through opening *o'*, around partition E', and so on, until it reaches the top of column B, thus being subjected during the passage to a great friction and concussion, losing caloric, and thereby lowering in temperature. These frictions and reductions of temperature condense a great deal of fusil or other essential oil vapor, and also aqueous vapor, which, in a liquid state, are returned back to vessel A, falling in drops, for instance, on partition E'', slide along it and through space F'', drip down onto partition C'', then through pipes D'' D' onto partition E', and so on, until they reach the lowest partition G and pipe *g*, through which they pass into vessel A, and from there can be returned to the still, if desirable, every time the work stops, or oftener.

The number of partitions in the column B depends upon the size of distillery and the perfection of proposed purification of the alcohol vapor. I use from thirty to fifty partitions, and even more. The partitions should be always so shaped and arranged as to submit the vapors to a great friction against their surfaces, and to easily convey the condensed oily and aqueous vapors, in the shape of oil and water, back to the vessel A. Their shape and arrangement therefore may be greatly modified without substantially changing the principle underlying the construction of the column and the object attained thereby. H is a precipitator or con-

denser, to precipitate or condense at once all the oil vapors or aqueous vapor ascending with alcohol vapor to the top of the column B, and thus separate them from the said alcohol vapor. The precipitator is a double water-holder, having a passage between the two water-holders for the vapors to pass. I is the inlet-pipe, through which water fills the spaces K K, and through the side pipes J J fills the spaces L L, from which, by the pipes l l, it is conducted into and fills the space M, and then goes out by a discharge-pipe, m. N is the passage for the alcohol vapor. The water in the precipitator is in constant motion. The oil vapors and aqueous vapors that ascended to the top of the column B with alcohol vapor without being condensed, now entering the passage N, from a sudden reduction in temperature, rapidly condense, and in drops are conveyed down the column and returned to the vessel A, while the alcohol vapor passes on higher. P P are the vessels for the charcoal-holders Q Q and steam-chambers T T. The alcohol vapor from the precipitator H passes by one or both pipes, q q, into the charcoal holders Q Q, perforated at the bottom, and, working its way through the charcoal, becomes purified of traces of fusil-oil or other impurities that perhaps were not condensed in the precipitator H, and thus, perfectly purified, passes through pipes r r into the distillery condenser R, where it is condensed into high wines or alcohol in the ordinary manner. Entering the vessel P P the alcohol vapor may partially condense, in which case it is conducted from

there by pipes u u into the column B, where it vaporizes again. T T are chambers to receive steam for the purpose of warming the alcohol vapor at the moment of its entering the charcoal, if desirable. t t are the inlet and outlet pipes for the steam, which when used is renewed constantly. Waste steam is intended to be used for the purpose. By using steam here less steam will be required for the column and vessel A, or even in the still S.

It may be seen, from the above description of the apparatus and of the successive operations over the alcohol vapor, that by placing my apparatus between the still and the condenser in any distillery, an uninterrupted distilling operation will be established, producing by an ordinary distillation high wines or alcohol perfectly free from fusil or other essential oils or impurities, and of any desirable strength, while the quantity of wines produced from a certain quantity of grain will not be in the least diminished.

The apparatus can easily be adapted also for use in rectifying establishments.

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

The combination of the vessel A and column B with the precipitator H, charcoal-chambers Q Q, and steam-chambers T T, when constructed and arranged to operate substantially as and for the purpose set forth.

Witnesses: JULIUS KUNZE.
WILLIAM ALTMAN,
JOHN A. SCHENK.