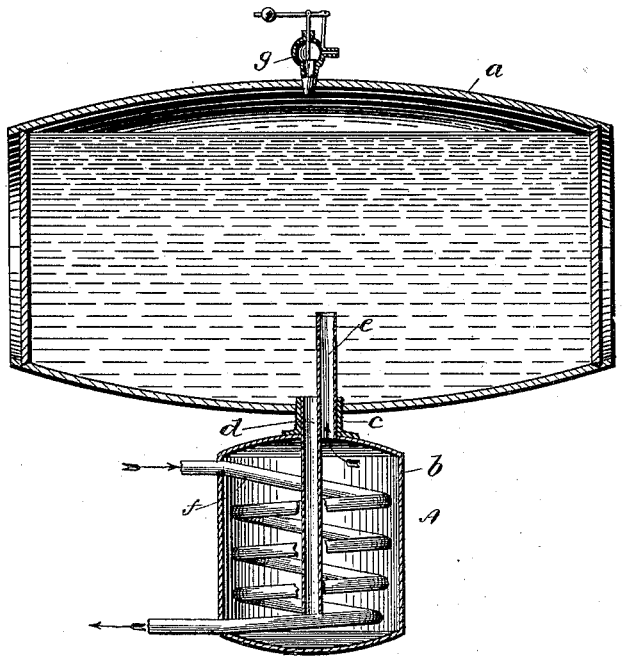
(No Model.)

J. STITZEL.

APPARATUS FOR IMPROVING SPIRITS.

No. 306,437. Patented Oct. 14, 1884.



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UNITED STATES PATENT OFFICE.

JACOB STITZEL, OF LOUISVILLE, KENTUCKY.

APPARATUS FOR IMPROVING SPIRITS.

SPECIFICATION forming part of Letters Patent No. 306,437, dated October 14, 1884.

Application filed April 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, JACOB STITZEL, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Apparatus for Improving Spirits, of which the following is a full, clear, and exact description.

The object of this invention is to provide a simple and efficient device for improving (so technically called) "barreled spirits;" and the invention consists in a vessel applied air-tight to the bung-hole of a barrel, and provided with a heating device—such as a coil or pipe—and passages for conducting the spirits from the barrel into the vessel, and for returning the spirits back again into the barrel, thus keeping up a forced circulation and agitation of the liquor and improving its quality and flavor without losing a drop of the original package, and hence without disregarding the revenue laws, substantially as hereinafter specified and claimed.

In the accompanying drawing, the figure shows my apparatus in partial vertical section applied to a barrel of spirits.

a is the barrel filled with spirits, and A designates my apparatus as a whole, consisting of a water-tight cylindric metal vessel, *b*, having an exteriorly screw-threaded neck, *c*, whereby it may be secured in the bung-hole of the barrel, or attached to a screw-threaded metal bushing or bung-thimble in the barrel, in operation the barrel being above or over the apparatus.

d is a tube, which I call the "induction-tube," secured in the neck *c* of the vessel, opening, say, flush with the mouth of the neck, and extending thence down into or nearly to the bottom of the vessel *b;* and *e* is a second tube, which I call the "eduction-tube," also secured in the neck of the vessel, opening at its lower end into the upper end of the vessel, and extending up above the vessel a sufficient height to enter a barrel well up toward or beyond its center line. These tubes are open at both ends. When in position, tube *d* will open into the barrel on a level with its lowermost plane.

f is a coil of pipe arranged within the vessel *b*, and having its upper end as the inlet extending from a steam-boiler or other suitable source of heating agent or medium, and having its lower end as the outlet to return the heating agent to its source for reheating, or to serve as an exhaust under suitable restriction. A vent is made in the barrel, and it may be supplied with a safety-valve, *g*, or other suitable indicator, automatic or otherwise, for convenience in watching the progress of the operation.

The drawing shows the apparatus applied to a barrel in position for use, and the operation proceeds as follows: The spirits will flow from the barrel through the pipes *d* and *e* in the first instance only into the vessel *b* and fill it, and the heating agent having been let into the coil till a temperature of about 165° Fahrenheit is obtained and maintained, there is produced an agitation or movement of the spirits in the vessel, whereby results an expansion of volume of the spirits, the incidental pressure of which, instead of convection, as heretofore, will force the spirits through the pipe *e* back into the barrel, agitating and mildly heating its contents. The spirits expelled from the vessel *b* will be replaced by other and colder through tube *d* only, descending from the barrel; being heated they are forced back through tube *e*, and so on continuously until the whole contents of the barrel have been withdrawn and returned, when vapor escaping from the vent will serve to indicate the completion of the process. During this operation the spirits will be in a constant state of forced agitated circulation, and I have found that with my apparatus I can effectually improve a barrel of spirits in about from thirty to sixty minutes, depending upon the amount of heating-surface in the coil; and in view of this shortness of time of treatment I have far less loss of spirits by evaporation than has been possible with apparatus heretofore employed, in which the time consumed varied from twelve to forty-eight hours, and convection was depended upon for agitating the spirits instead of positive forced circulation.

By the term "expansion of volume" I include a circulation by gravity or differences in specific gravity; for, as is obvious, the colder the liquor the heavier it is, and hence the liquor or spirit as it is heated will rise through

the cooler liquor and cause it to descend. There must thus of necessity be a constant movement of the spirit until the whole contents of the barrel attain an equal temperature.

The heater A may have steam let loose into its body and the liquor passed through the coil by obvious changes, and the liquor may be exposed to the heat in a variety of modes to apply the heat more or less quickly.

The tubes *d* and *e* are variable as to length and arrangement with relation to the heater and barrel, and are serviceable only to the extent of induct and educt.

I do not broadly claim creating circulation of a fluid in a vessel by means of an attached vessel connected therewith by pipes and containing a higher temperature, for thus broadly stated such mechanism has been largely employed in the arts.

In the art of aging liquors prior to my invention a device has been employed in which heat and electrolysis have figured as the conducing elements of circulation, the heat being applied by a hot-water or steam heater inserted in the liquor in the barrel, and expansion provided for by an attached reservoir; but I am not aware that heat and agitation, so essential to the operation of improving spirits, have heretofore been had by a circulation established and maintained by differences in temperature between two connected vessels, and differences in specific gravity between the liquid in the said two vessels, as herein claimed, by means of a portable vessel adapted to be carried from one barrel to another as each barrel is to be treated, and easily connected therewith and disconnected therefrom at the bung-hole, and by which every particle of liquor taken from the barrel is returned to the same, so as to comply with the revenue laws.

What I claim is—

1. The portable apparatus for improving spirits by a forced circulation by expansion of volume, the same consisting of a water-tight vessel having a neck for removably connecting it with the bung-hole of a barrel of spirits, and provided with induction and eduction tubes, substantially as shown and described, and a heating-coil, as set forth.

2. The combination of a water-tight vessel having a neck to engage the bung-hole of a barrel to separably connect it with a barrel of spirits, a tube leading from the barrel to or nearly to the bottom of said vessel, and arranged in its neck, another tube leading from the top of said vessel through said neck into or nearly to the center of said barrel, and a heating-coil within said vessel, whereby spirits flow from the barrel into the vessel, are there heated, and thence forcibly returned to the barrel by expansion of volume, substantially as set forth.

3. The combination, with a water-tight vessel provided with a screw-threaded neck, and adapted to be thereby removably or separably connected to a barrel of spirits at its bung-hole, of induction and eduction tubes arranged in said neck, and connecting the barrel and vessel to provide for circulation of the spirits from one to the other, a heating-coil in said vessel insuring such circulation, and a valvular vent, substantially as shown and described.

4. The portable apparatus for improving spirits by a forced circulation by expansion of volume or differences in specific gravity between the various portions of the whole, consisting of a heater provided with means for its ready connection with and disconnection from a barrel of spirits, and provided with a neck, an induct, and an educt arranged in said neck for opening communication between the connected barrel and heater, substantially as shown and described.

In testimony whereof I have hereunto set my hand this 4th day of April, A. D. 1884.

JACOB STITZEL.

Witnesses:

FRED. GOERTUS,

LOUIS HOLLENBACK.