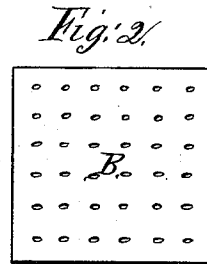
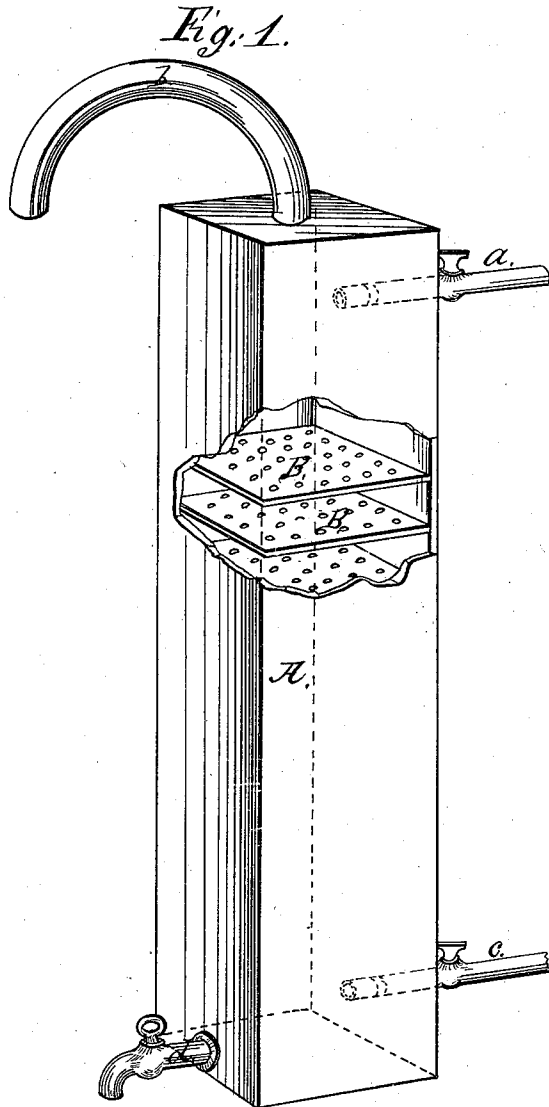


G. WATERS.  
APPARATUS FOR PURIFYING WASH FOR THE MANUFACTURE OF  
VINEGAR.

No. 63,970.

Patented Apr. 16, 1867.



*Witnesses.*

*S. A. Miller*  
*Chas. Spiegl,*

*Inventor.*

*G. Waters*

United States Patent Office.

GARDNER WATERS, OF CINCINNATI, OHIO.

Letters Patent No. 63,970, dated April 16, 1867.

IMPROVED APPARATUS FOR PURIFYING WASH FOR THE MANUFACTURE OF VINEGAR.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GARDNER WATERS, of Cincinnati, Hamilton county, State of Ohio, have invented a new and useful Apparatus for the Clarifying or Refining of Beers or other Washes which have undergone the vinous fermentation, for the purpose of manufacturing the same into vinegar.

My invention consists of an upright column of any desired length, square or round, or any other shape, of wood, iron, copper, or other material. The central portion of said column is filled with perforated diaphragms or plates B, arranged one above another, twelve inches, more or less, apart. Above the upper of these plates, as at *a*, in the accompanying drawings, which form a part of these specifications, is admitted the beer or wash, which trickles down, over, and through these plates, meeting in its descent the opposing ascending steam, which is admitted at or near the bottom of the column, as at *c*. The steam, in its ascent, commingles with the descending beer, vaporizing all or nearly all of the water of said beer, and all of the spirit contained therein, carrying the whole, in the form of vapor, up and out of the column A, through the pipe *b*, into any kind of condenser, whence it is received into proper receptacles; the spent grains or other impurities being discharged from the bottom of the column, at *d*, continuously, or periodically, as may be desired, but the supply of beer or wash into the top of the column should be continuous, and may be through a force-pump, or from an elevated receiver. The operation is facilitated if the wash be first heated to about 100° Fahrenheit before admission into the column. I have in successful operation a wooden column, twenty-four feet high, and twelve inches square, made of two-inch pine plank, held together by clamps about eighteen inches apart. This column is filled with fifteen plates, with about three-fourth inch holes, arranged ten inches apart, communicating at about four feet from top of column. The apparatus is fed from an elevated open tank, through a pipe, regulated by a stop-cock. The essential oils of the grains, which are so obnoxious to the distiller, but so desirable to the vinegar-maker, as imparting to the vinegar a very agreeable bouquet, are retained by my apparatus.

I claim the apparatus made and operating substantially as above set forth and described.

GARDNER WATERS.

Witnesses:

S. S. MILLER,  
CHARLES SPIEGEL.