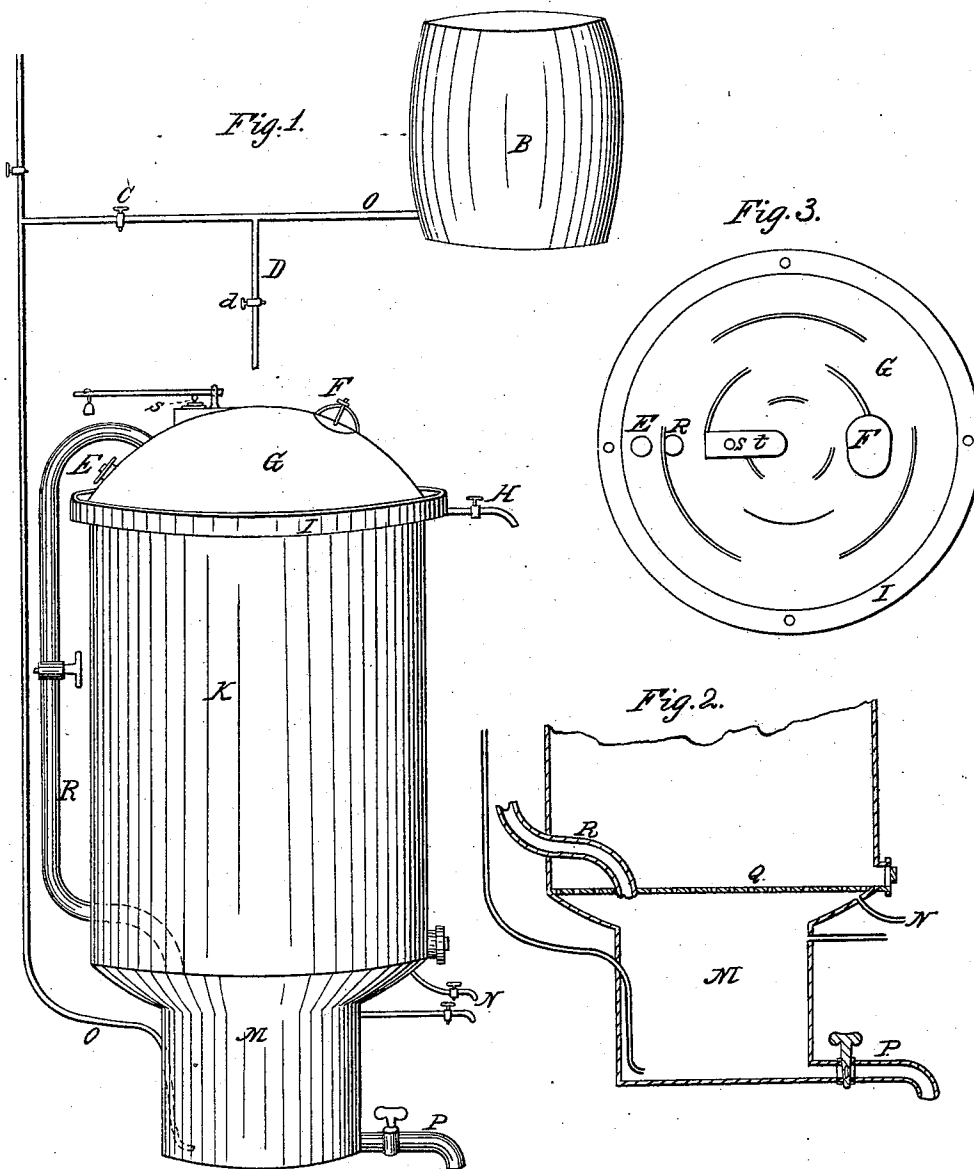


A. STEERS.
Making Extracts.

No. 14,418.

Patented March 11, 1856.



UNITED STATES PATENT OFFICE.

ABRAHAM STEERS, OF MEDINA, NEW YORK.

APPARATUS FOR MAKING EXTRACTS.

Specification forming part of Letters Patent No. 14,418, dated March 11, 1856; Reissued January 2, 1866, No. 2,142.

To all whom it may concern:

Be it known that I, ABRAHAM STEERS, of Medina, in the county of Orleans and State of New York, have invented a new and Improved Method of Extracting and Concentrating the Essential Soluble Portions of Barks and Other Vegetable Substances; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

Figure 1, is a side view of the apparatus employed by me in my said method of producing concentrated vegetable solutions; Fig. 2, is a sectional drawing, representing the internal arrangement of the bottom of said apparatus; and Fig. 3, a view of a detached portion of the apparatus.

Similar letters indicate like parts in all the figures.

In extracting and concentrating vegetable solutions, I make use of an apparatus composed of a percolator whose perforated bottom divides it from an evaporating receiver, and whose dome shaped top can be thrown into direct communication with said evaporating receiver by opening a cock in a connecting side-pipe. The dome-shaped top of the aforesaid percolator must be supplied with a weighted valve, and should have a plug-stopped opening for the reception of the vegetable substances to be operated upon, and the menstruum for properly wetting said substances. The said top of the percolator, must also be so constructed or situated, that it can be suddenly cooled, for the purpose of condensing steam within the same.

In the accompanying drawings K, is the percolator; M is the evaporating receiver; Q, is the perforated bottom of the percolator; G, is the dome-shaped top of the percolator; R, is the side pipe which connects the evaporating receiver M, with the top of the percolator; F, is a manhole in the top of the percolator; E, is a screw-plug, closing an aperture in the top G, through which the substance to be operated upon may be placed within the percolator, and also the menstruum for wetting the same; s, is a weighted valve closing a conical aperture in the offset t, in the top G, of the percolator; P, is a stop-cock through which the contents of the evaporating receiver may be discharged; N, indicates stop cocks for

ascertaining the height of the fluid in said evaporating receiver; B, is a cistern placed some distance above the top of the percolator; O, indicates a pipe leading from the cistern B, to the receiver M; D, is a branch descending from the pipe O, and terminating a short distance above the central portion of the top G, of the percolator; C, is a stop-cock in the pipe O, and Z, is a stop-cock in the branch D, of said pipe.

The under side of the top G, of the percolator, may be supplied with ledges—as shown in Fig. 3, for the purpose of causing the fluid which is condensed thereupon to drip into the central portions of the percolator, instead of running down to the periphery of the same, as would be the case if said cover should have a smooth under surface.

A gutter I, is formed around the periphery of the dome-shaped top of the percolator, for the reception of the refrigerating fluid which may be discharged upon said cover, and which is carried off through the discharging pipe H.

My method of dissolving, displacing, and concentrating the soluble portions of any suitable vegetable substance, is as follows, viz: The vegetable substance, properly disintegrated, is placed within the percolator, and is then saturated with any suitable menstruum. I generally allow the menstruum to pass through the vegetable substance into the receiver M, until the said fluid rises therein to one of the stop-cocks N; I then cause the said receiver M, to be acted upon by heat, and close the stop-cock in the pipe R; I also so adjust the weight on the lever of the valve s, that there will be but a slight pressure upon said valve. The said adjustment of the valve s, is allowed to remain until the steam rising from the receiver M, and penetrating every portion of the vegetable matter in the percolator, has displaced the fixed air in said vegetable matter, and discharged it through said valve. As soon as the operator discovers that all the fixed air has been discharged from the contents of the percolator, he must then so adjust the weight upon the lever of the valve s, as to cause a pressure upon it equal to about twenty-five pounds to every square inch of the area of the aperture closed by said valve. The process is then continued until the lifting of the valve s, indicates that there is a

pressure of steam within the percolator, upon a corresponding amount of surface, equal to that of the external force exerted upon the valve *s*; then, either by regulating the fire under the receiver *M*, or by letting cold water upon the top *G*, of the percolator, the steam should be kept at about the above mentioned degree of pressure for a suitable length of time to dissolve the soluble portions of the contents of the percolator—which I generally find to be about one hour,—then the steam should be admitted directly to the top of the percolator by opening the cock in the pipe *R*, and at the same time, a stream of cold water should be admitted upon the apex of the top *G*, of the percolator. The fluid produced by the condensation of steam on the under surface of the top of the percolator, as it percolates through the substance operated upon, will absorb and carry down its soluble matter into the receiver *M*. The aqueous portion of the fluid within the receiver *M*, being continuously separated therefrom in the shape of steam, and carried to the top of the percolator and there condensed, and the fluid of condensation being, as before stated, converted into a vegetable solution during its passage back to the receiver again, it will be perceived that but a comparatively short period of time will be required to extract the whole of the soluble matter contained in the vegetable substance placed within the percolator, and, if desired, in the shape of a saturated solution.

The escape of the air through the valve of the percolator, above referred to, will not be indicated by the organs of vision, but by a sharp whistling sound. When the steam commences to escape through the valve of the percolator, it will be indicated by the organs of both seeing and hearing. After

the aforesaid greater degree of pressure is exerted upon the valve *s*, it should be occasionally raised to let out any air that may afterward be displaced and forced into the crown of the percolator. The accumulation of a stratum of air within the crown of the percolator, would prevent the steam from coming in contact with its under surface, and thereby greatly retard the condensation of the steam when the refrigerating fluid is discharged upon the outer surface of said crown.

Having thus fully described my improved method of displacing and condensing the soluble portions of vegetable substances, what I claim therein as my invention and desire to secure by Letters Patent, is—

The within described displacing apparatus in connection with the application thereto of heating and cooling agents, substantially as herein set forth; viz:—the said apparatus being composed of the percolator *K*, and the receiver *M*, separated from each other by means of a perforated diaphragm, or its equivalent,—the said percolator having its upper end closed by a metallic cover, supplied with an outwardly opening valve, at the same time that the top of said percolator is connected directly with the said evaporating receiver, by means of a pipe supplied with a valve, or a stop-cock; by which arrangement, the contents of said percolator can be operated upon, first, by steam generated in the evaporating receiver, and then by the percolation of the menstruum, after it has been evaporated and condensed again, substantially as herein set forth.

ABRM. STEERS.

Witnesses:

Z. C. ROBBINS,
DANL. LANG.