

B. G. MARTIN.
MODE OF OBTAINING EXTRACTS.

No. 46,809.

Patented Mar. 14, 1865.

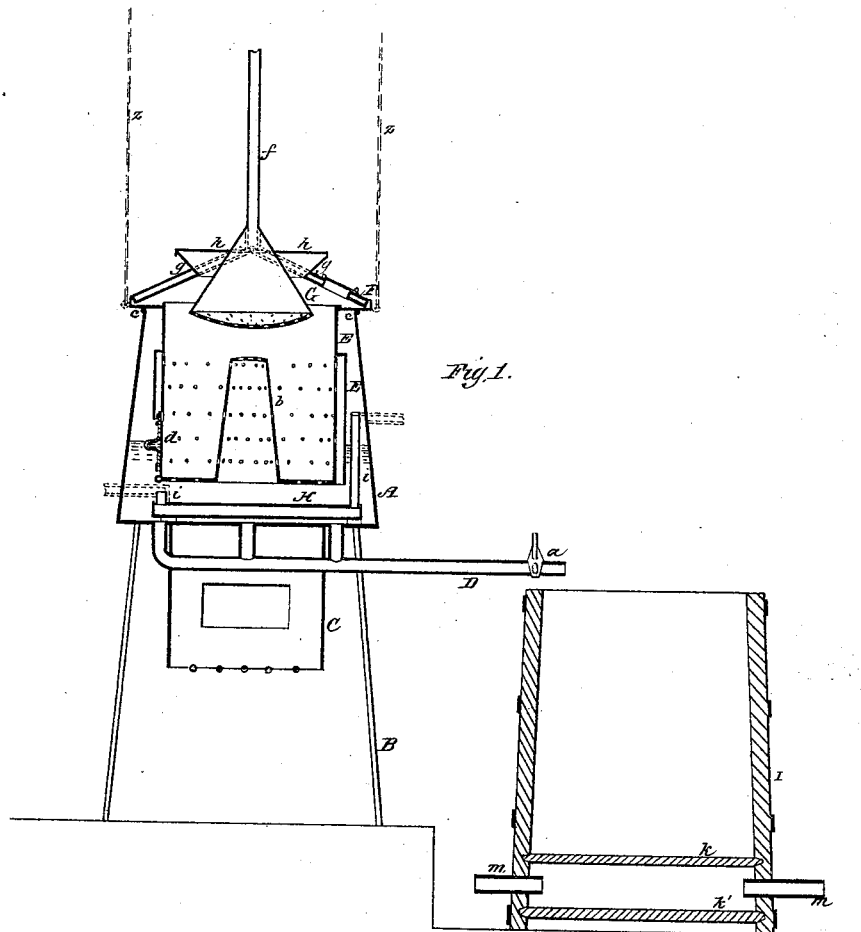


Fig. 1.

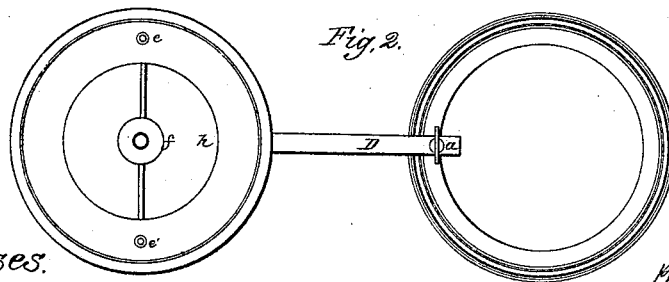


Fig. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

BENJAMIN G. MARTIN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED MODE OF OBTAINING EXTRACTS.

Specification forming part of Letters Patent No. 46,809, dated March 14, 1865.

To all whom it may concern:

Be it known that I, BENJAMIN G. MARTIN, of Philadelphia, Pennsylvania, have invented an Improved Mode of Obtaining Decoctions; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in separating the particles of a material of which a decoction is to be made by introducing into a body of the same a current or currents of air, so that the water which is afterward introduced may be brought into intimate contact with every particle of the material and dissolve all the soluble portions of the same.

My invention further consists in an apparatus, fully described hereinafter, for carrying out my improved mode of obtaining decoctions.

In order to enable others to practice my invention, I will now proceed to describe the manner of carrying the same into effect.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a sectional elevation of an apparatus for carrying out my improved mode of obtaining decoctions, and Fig. 2 a plan view.

Similar letters refer to similar parts in both views.

A is what is technically termed a "mash-tub," and is a cylindrical vat or boiler, of wood or metal, supported, in the present instance, on legs B. At the under side of the mash-tub is a fire-box, C, through the upper part of which passes a pipe, D, the latter communicating with the mash-tub, and having at its outer end a cock, a.

E is a metal tank, in the center of which is a conical casing, b, the latter being open at the bottom, and both the tank and casing being perforated to the height of the top of the latter. From the upper edge of the tank extends a flange, c, to which are attached the lower ends of a number of ropes or chains, z, connected to suitable apparatus by means of which the tank may be raised from the mash-tub. Around the outer side of the tank E is a jacket, E', which extends above the perforations in the tank, and is closed at the top and open at the bottom. In one side of the tank,

near the lower edge of the same, is a door, d, for a purpose described hereinafter. Above the tank E is a double casing or cover, F, in which is maintained a constant circulation of cold water. In the center of the cover F is an opening, through which projects the upper end of a conical vessel, G, the bottom of the latter being perforated, and from the top of the same projects a pipe, f, which communicates in any suitable manner with a reservoir containing warm water. Above the top of the cover F is a hopper, g, which is covered by suitable lids, h h.

At the bottom of the tub A is a flat case, H, into which steam is admitted through tubes i and i'.

I is a vat, which is provided with a false bottom, k, and with the space between the latter and the true bottom, k', communicate the pipes m m, for a purpose described hereinafter.

Operation: The material of which a decoction is to be obtained is first introduced into the tank E. The lids h are then closed, and one-third of the water which is to be employed in obtaining the decoction is introduced into the vessel G, and is distributed from the latter over the material in the tank. After percolating through the material the water passes through the perforations in the tank into the tub A, where it is maintained at the required temperature by the heat imparted by the steam-case H. In about an hour after the introduction of the water the tank E is withdrawn from the mash-tub by means of the chains z, and the remaining two-thirds of the water is introduced through the distributor G into the tank, from which it flows into the tub beneath. The tank is then lowered to its first position. As the tank descends into the water in the tub, the air confined beneath the jacket E', as well as that in the casing b, will be forced by the pressure of the water through the perforations in the tank and its casing and into the mass of material in the former, the particles of the said material being thus so separated from each other that on the admission of the water the latter will be brought into intimate contact with every particle. As the vapor arising from the heated liquor comes in contact with the inner surface of the cover F, it is rapidly condensed, and flows back again into the tank. When a

decoction of the proper strength is obtained, the liquor is drawn off through the pipe D into the vat I, where it is allowed to ferment, the proper temperature being maintained by a current of warm water or steam circulating between the two bottoms *k* and *k'*. During the fermentation of the liquor in the vat I the tank E is elevated, and the spent material is removed through the door *d* by means of a rake or other suitable instrument. The tank is then again filled, and another decoction is obtained in the same manner as the first.

The method heretofore pursued of obtaining decoctions has been to introduce the material of which the decoction is to be made, together with water already heated, into a vessel, and then to stir the whole until the water is charged with all the matter it will dissolve. It is then drawn off and another supply of water admitted, this operation being repeated until all the soluble portions of the material capable of being extracted are obtained. This operation is tedious and expensive, and the soluble portions are but imperfectly extracted, owing to the material caking or "setting," so that the water is not brought into contact with many particles of the same. This is especially the case in brewing. In this operation also the escaping vapor from the vat carries with it much of that portion of the material which contributes mainly to impart a flavor to the decoction.

By the process above described the water is brought into intimate contact with every portion of the material, and as the liquor is maintained at a high temperature during the entire

operation, the soluble portions of the material are completely extracted without an undue expenditure of time and labor. By this process, also, the flavor is retained, and the decoction made is greatly superior to that obtained in the usual manner.

In case it is desirable, the hopper *g* may be dispensed with, the material being introduced into the tank through a suitable opening in the cover. It will also be apparent that a coil of steam-pipe may be substituted for the case H, and in some instances, where steam cannot be readily obtained, the liquor in the vat may be heated by means of a fire in the fire-box C.

I claim as my invention and desire to secure by Letters Patent—

1. Separating the particles of a material of which a decoction is to be made by introducing into a body of the said material a current or currents of air, for the purpose specified.

2. The perforated casing E, with its jacket E', combined with the tub A, and operating substantially as and for the purpose specified.

3. The condensing casing or cover F, combined with a mash-tub, substantially as and for the purpose set forth.

4. The fermenting-vat I, with its false bottom *k*, and pipes *m m*, or their equivalents.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMIN GREEN MARTIN.

Witnesses:

CHARLES E. FOSTER,

JOHN WHITE.