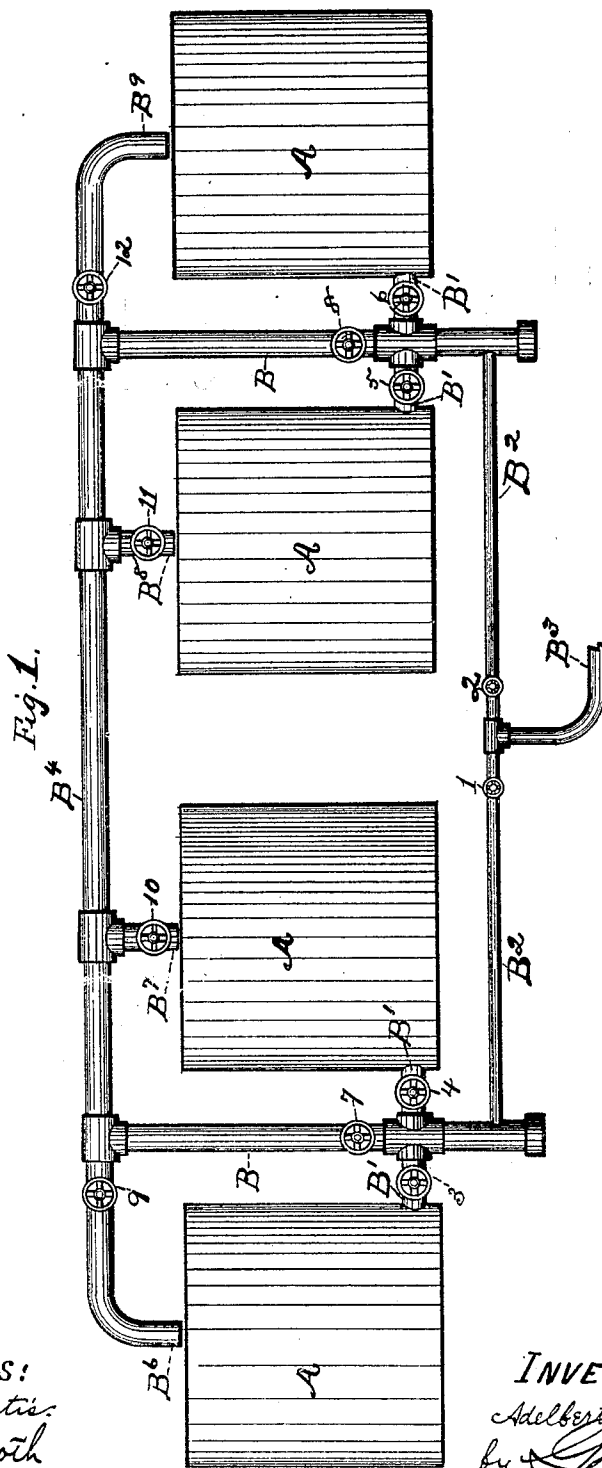


A. CHAMBERS.

APPARATUS FOR TREATING VEGETABLE SUBSTANCES:

No. 425,980.

Patented Apr. 22, 1890.



WITNESSES:
Frank C. Curtis
John T. Booth

INVENTOR:
Adelbert Chambers
by Geo. A. Mosher
att'y.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

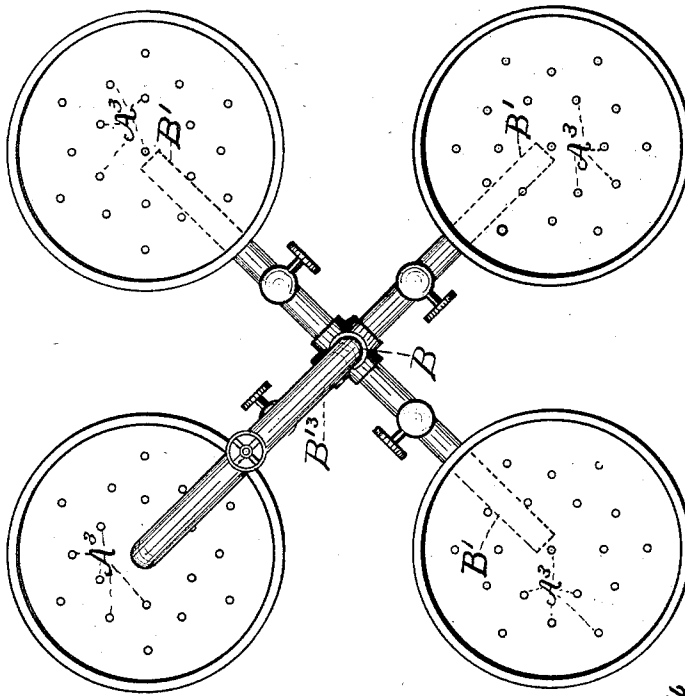
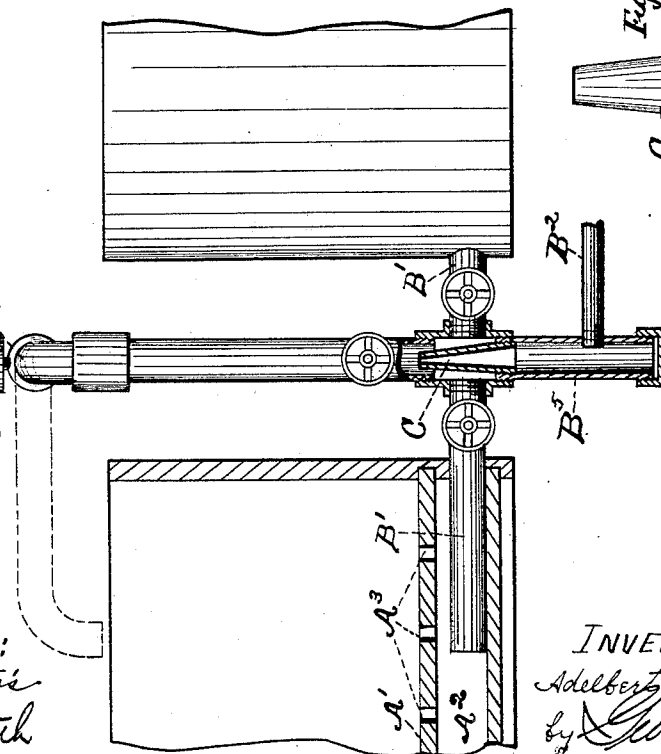


Fig. 4.



Fig. 2. B^13



WITNESSES:
Frank C. Curtis
John T. Booth

INVENTOR:
Adelbert Chambers
by *Geo. A. Mosher*
Atty.

UNITED STATES PATENT OFFICE.

ADELBERT CHAMBERS, OF TROY, NEW YORK, ASSIGNOR TO JOHN A. MANNING, OF SAME PLACE.

APPARATUS FOR TREATING VEGETABLE SUBSTANCES.

SPECIFICATION forming part of Letters Patent No. 425,980, dated April 22, 1890.

Application filed May 10, 1889. Serial No. 310,218. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT CHAMBERS, a resident of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Apparatus for Treating Vegetable Substances; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Similar letters and numerals refer to similar parts in the several figures therein.

My invention relates to improvements in apparatus for treating vegetable substances; and it consists in the novel construction and combinations of parts hereinafter described, and pointed out in the claims.

Figure 1 of the drawings is a view in elevation of a series of open tubs or boilers and their connecting and operating pipes. Fig. 2 is a central vertical section of one of the tubs and of a portion of the pipes, a portion of the tubs being broken away and one shown in elevation. Fig. 3 is a top plan view of a group of four tubs connected directly with a common stand-pipe, portions being broken away. Fig. 4 is a view in elevation of the contracted steam-nozzle detached.

By means of my improved apparatus I am able to produce alternating currents by means of the same jet of steam which is employed to heat the mass and wholly without the aid of pumps, and also to discharge the hot fluid contents of one tub in the series into any other tub in the series by means of a steam-jet, thus applying the liquor and heat remaining in the tub after its contents have been cooked to the fresh stock in another tub.

In Fig. 1 I have shown four tubs A, arranged in a row. The tubs are preferably arranged in pairs or groups, each pair being provided with a stand-pipe B. These pipes are connected with the interiors of the tubs by lateral pipes B' and with a steam-supply by steam-pipes B² and B³. The upper ends of the stand-pipes are also connected by the horizontal pipe B⁴, which is supported di-

rectly above the tubs and has lateral discharge-openings B⁶, B⁷, B⁸, and B⁹, for discharging into the tops or upper parts of the tubs. The tubs are preferably provided with a false perforated bottom A' to sustain the stock and form a reservoir A², into which the liquor percolates through the perforations A³. The lateral pipe B' reaches, preferably, to a point near the center of this reservoir, as shown in Fig. 2. The stand-pipe is also provided with an injector, which may consist of a pipe or nozzle C, having a contracted opening at one end and exteriorly threaded at its other end, whereby it can be secured to the threaded end of the steam-pipe B³ and have its contracted end located in the stand-pipe just above the mouths of the pipes B'.

Any known form of steam-injector may be employed. The various pipes are provided with well-known stop-cocks or valves, which I have designated by numbers.

The operation of the apparatus is as follows: The tubs are first filled with the stock and cooking-liquor in any known manner, or one tub may be filled with liquor from another tub, as hereinafter fully explained. The steam-cocks 1 and 2 and cocks 3, 4, 5, and 6 are opened and the cocks 7 and 8 closed. Steam is thus admitted into the bottom of all the tubs until the lower part of the stock has become sufficiently heated. The valves 7 and 8, as well as valves 9, 10, 11, and 12, are then opened, whereupon the liquor is drawn from the bottom of the tubs and forced by the steam-jets up the stand-pipes and into the tops of the tubs through the respective lateral openings B⁶, B⁷, B⁸, and B⁹ in the horizontal pipe connected with the stand-pipes. This latter step withdraws the superheated liquor from the bottom of the tubs and deposits it in such condition upon the cooler surface of the stock in the tubs, and by thus overcoming the rapid loss of heat at the surface of the open tub, due to radiation and evaporation, I am able to maintain a nearly uniform temperature throughout the mass. By a simple manipulation of valves the medium through which heat is communicated to the mass is made to carry the heat either to the lower or upper part of the tub, or to any part of the tub to which a lateral from the stand-

pipe isled. I am able not only to more evenly and quickly cook the stock, but I can make use of the steam-jet to discharge the liquor from a tub after the stock is cooked into a
 5 freshly-stocked-tub. For example, should it be desired to discharge the liquor from the first tub on the left in Fig. 1 into the last tub on the right, it would only be necessary to close cocks 4, 8, 9, 10, and 11 and open cocks
 10 1, 3, 7, and 12.

It will be seen from an inspection of the drawings that by opening and closing the proper cocks the contents of any one tub of the series can be discharged into any other
 15 tub of the series.

When desired, the stand-pipe may be provided with a revoluble nozzle or lateral B¹³, jointed to the stand-pipe in any known manner, so that its nozzle can be swung around
 20 in a circle over any desired number of tubs arranged around the stand-pipe about equidistant therefrom.

In Fig. 2 I have represented two tubs and in Fig. 3 four tubs. When arranged as shown
 25 in Fig. 3, any one tub can be discharged into any other by opening the cock in the pipe leading from the tub to be discharged from to the stand-pipe, closing the cocks leading from the other tubs, and swinging the nozzle
 30 around over the desired tub. The tubs thus arranged around each stand-pipe may be termed a "group," each group consisting of any desired number of individual tubs.

Any desired number of groups may be connected by liquor-pipes B⁴ and steam-pipes B²,
 35 substantially as I have shown the two groups

of two tubs each connected in Fig. 1, and the liquor discharged from any individual tub into any other individual tub of the different groups.

What I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for treating vegetable substances, consisting of a group of tubs, a common stand-pipe, valved pipes connecting the
 45 lower ends of the tubs with the lower end of the stand-pipe, pipes leading from the upper end of the stand-pipe to the individual tubs, a stop-cock in the stand-pipe located immediately of the upper and lower connecting-
 50 pipes, a steam-nozzle located in the stand-pipe and leading toward the upper end, and a steam-supply pipe connected with such nozzle, substantially as described.

2. In an apparatus for treating vegetable
 55 substances, the combination, with a plurality of valved stand-pipes, each of which is connected with the individual members of a group of tubs by an upper and lower valved
 60 pipe and provided with a steam-nozzle leading toward the upper pipe from a steam-supply pipe, of liquor-pipes B⁴, for connecting the upper parts of the stand-pipe, and steam-
 65 pipes B², for connecting the steam-supply pipes, substantially as described.

In testimony whereof I have hereunto set my hand this 4th day of May, 1889.

ADELBERT CHAMBERS.

Witnesses:

FRANK C. CURTIS,
 W. H. HOLLISTER, Jr.