

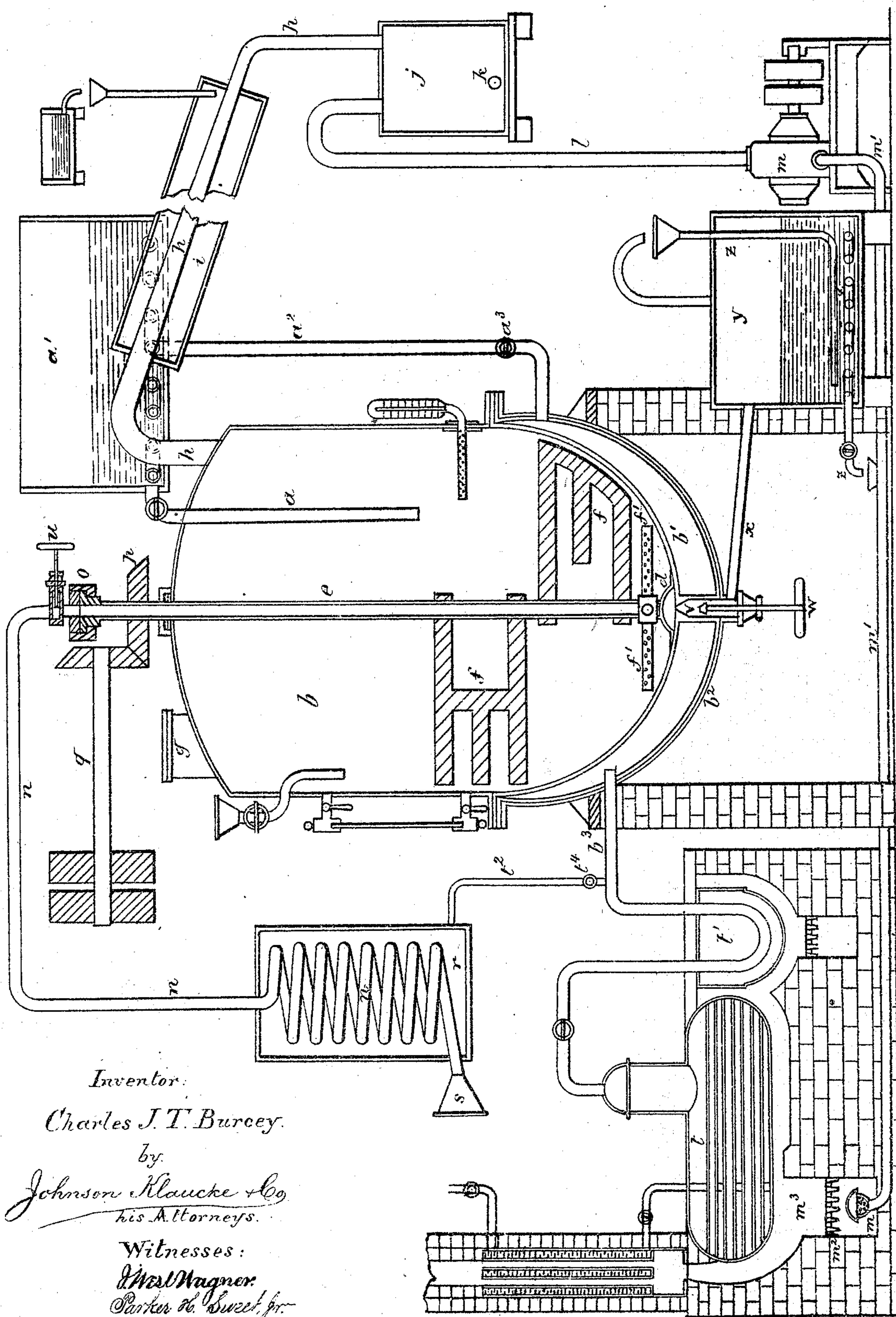
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C. J. T. BURCEY.

Improvement in Distilling and Bleaching Oils.

No. 122,810.

Patented Jan. 16, 1872.



Inventor:

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by

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Witnesses:

Wm. Wagner.
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UNITED STATES PATENT OFFICE.

CHARLES J. T. BURCEY, OF BLACK ROCK, CONNECTICUT.

IMPROVEMENT IN DISTILLING AND BLEACHING OILS.

Specification forming part of Letters Patent No. 122,810, dated January 16, 1872.

To all whom it may concern:

Be it known that I, CHARLES J. T. BURCEY, of Black Rock, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Method of Bleaching Oil, and in Apparatus for that purpose, of which the following is a specification:

The accompanying drawing represents a sectional side elevation of the improved apparatus used in my new method of bleaching oils.

The oil to be bleached is admitted from a reservoir, a^1 , through a tube, a , into the retort b , which is suitably bricked up. The retort may be heated by superheated steam or by fire, in which former case the retort is provided with a double bottom, b^2 , forming a steam-space into which superheated steam is admitted through a pipe, b^3 , which steam passing out through a pipe, a^2 , which forms a coil in the reservoir a^1 , heats the oil in the reservoir and thus facilitates the heating process in the retort. A stop-cock, a^3 , serves to regulate the passage of steam through pipe a^2 . The steam is generated in a boiler, t , and superheated in a superheating furnace, t^1 , from which it is led through the pipe b^3 to the steam-space b^1 . From this pipe b^3 extends a smaller pipe, t^2 , provided with a stop-cock, t^4 , to the air-tube heating-chamber r , so that steam may be admitted to said chamber by opening stop-cock t^4 . On a suitable step, d , in the center of the bottom of the retort, the shaft e has its pivot. This shaft consists of a hollow tube from which extend in opposite directions, and one a little above the other, two agitators, f , the lower one being at a sufficient height above the bottom of the retort to allow room for the four curved arms f' , extending from the lower end of the shaft parallel with the bottom of the retort, which arms are perforated and hollow, communicating with the interior of the hollow shaft e . The top of the retort b is provided with the usual man-hole g , and at the opposite side from the same with a tube, h , which passes through a condensing-chamber, i , and ends in a vacuum-chamber or reservoir, j , suitably constructed and provided with a stop-cock, k , through which the contents of reservoir j can be withdrawn. A tube, l , extends downwardly from the top of the reservoir j , and is suitably connected to an air-pump, m . The upper end

of the hollow shaft is connected to a tube, n , by means of an air-tight coupling, o , in such a manner that the shaft is free to revolve without breaking its connection with tube n . Between the coupling o and the top of the retort b the shaft e is provided with a cog-wheel, p , through which motion is imparted to the shaft from suitable gearing, q . The tube n passes through a heating-chamber, r , in form of a coil, leaving said chamber at or near the bottom, and ending outside of the same in a funnel-shaped mouth, s . The tube n just above the coupling o is provided with a valve, u , by means of which the said tube can be opened or closed. The bleached oil may be withdrawn through a valve-chamber, v , closed by a valve, w , and connected by means of a tube, x , to a reservoir, y , where the oil is cooled by means of a coil of pipe, z , through which a stream of water is continuously passing.

The operation of this apparatus is as follows: A suitable quantity of oil having been admitted into the retort b through pipe a , the same is heated by fire or superheated steam until it reaches a degree of 200, when the oil is agitated by revolving the shaft. The valve u being closed no air can enter the retort through tube n . The air-pump m is then worked, and a vacuum created thereby in reservoir j , and all the impure and light matter freed from the agitated oil in its distillation drawn into reservoir j through pipe h , being condensed on its passage through that part of said pipe which passes through the condensing-chamber i . This operation is continued until the oil is quite clear and freed from all impurities. If I desire to hasten the operation I use certain well-known chemicals to facilitate the drying, and when the oil is drawn off from the retort it will be clear, clean, and dry; or, in other words, fully bleached.

In order to obtain a very fatty oil all the watery parts of which are removed, I vary the process in so far as to heat the oil to 600°, drawing in air (which on its way through chamber r is thoroughly heated and dried, the valve u being opened,) by means of the vacuum created by the air-pump m in reservoir j , which heated air passing through tube n , shaft e , and the perforated arms f' , percolates through and is thoroughly mixed with the oil, absorbing and

carrying off with it all watery matter, which passes off with other impurities into reservoir *j*, and leaving nothing but a clear, heavy, fatty oil, which after being chemically dried may be drawn off from the retort, being then perfectly bleached.

I obtain another indirect but very important result by the use of this current of hot air and by the vacuum, whether the retort is heated from a fire-place over which the retort is suitably bricked in, or by superheated steam, as illustrated in the drawing. It is well known that establishments for bleaching oil or purifying it or similar substances, are very offensive by reason of their bad odor, and such establishments must always be located away from any neighborhood. This odor is the result of heating and other treatment of the oil during its purification, all of the gases and impurities evolved being allowed to escape, as they cannot be utilized. By my improved process of decomposing the oil by oxidation by means of the use of a current of hot air and a vacuum, I separate these gases at once from the oil, and they may be led to the fire-place and there assist in the combustion, instead of being allowed to escape freely. From the air-pump *m* extends a pipe, *m*¹, in any suitable way to just under the grate *m*² of the fire-place *m*³. In the operation, the air-pump forces the gas, which has entered the reservoir with the impurities separated from the oil in the retort by means of the agitation and vacuum, through this pipe *m*¹, under the grate, and this forcible stream or current of gas not only adds combustible matter to the fire, but also acts as a fan to the flame, thus creating an intense heat, accelerating the heating of the oil in the retort, and a consequent saving of fuel is attained.

My improved mode of bleaching oil is accomplished in much less time and at a greatly reduced cost, while it furnishes a much superior oil, especially for use in varnishes or for oil for typographical or lithographical impressions, than heretofore has been produced.

Having described my invention, I claim—

1. The combination of the air-tube *n*, heating-chamber *r*, revolving hollow heater-shaft *e*, heaters *f*, and hollow perforated arms *f*' in the retort *b*, all arranged and operating essentially as and for the purpose described.

2. In combination with the above, the tube *h*, condenser *i*, reservoir *j*, tube *l*, air-pump *m*, and gas-conveying tube *m*¹, all arranged to operate essentially as and for the purpose described.

3. The method of heating the oil in the reservoir *a*¹ previous to its admission into the retort *b*, by means of the superheated steam which has heated the retort and its contents, and which is led to the reservoir *a*¹ through a pipe, *a*², forming a coil in the same, essentially as described.

4. The combination of the boiler *t*, superheater *t*¹, pipe *b*³, steam-space *b*¹, pipe *a*², reservoir *a*¹, pipe *a*, retort *b*, hollow-shaft *e*, paddles *f*, hollow perforated arms *f*', hot-air pipe *n*, hot-air reservoir *r*, tube *t*², pipe *h*, condenser *i*, reservoir *j*, tube *l*, air-pump *m*, gas-conveying tube *m*¹, and valve *w*, all arranged to operate essentially as described.

The above specification of my improvement in mode and apparatus for bleaching oil, signed this 5th day of October, 1871.

CH. J. T. BURCEY.

Witnesses:

SAM. B. SUMNER,
MORRIS W. SEYMOUR.

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