Specification of Richard Shannon : apparatus for brewing, distilling, &c.;

Contributors

Shannon, Richard.

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A.D. 1798 . . . . . N° 2212.

SPECIFICATION

OF

RICHARD SHANNON.

APPARATUS FOR BREWING, DISTILLING, &c.

LONDON:
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Apparatus for Brewing, Distilling, &c.

SHANNON'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, RICHARD SHANNON, of Charlotte Street, in the Parish of Saint Pancras, in the County of Middlesex, Doctor of Physic, send greeting.

WHEREAS His most Excellent Majesty King George, did, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the First day of February, in the thirty-eighth year of His reign, give and grant unto me, the said Richard Shannon, His especial licence that I, the said Richard Shannon, during the term of years therein mentioned, should and lawfully might use, exercise, and vend, within England, Wales, and the Town of Berwick upon Tweed, and also in all His Majesty's Colonies and Plantations abroad, my discovery of a principle and Invention of "A NEW METHOD OF IMPROVING THE PROCESS OF BREWING, DISTILLING, BOILING, EVAPORATING, RAISING, APPLYING, AND CONDENSING STEAM OR VAPOUR FROM AQUEOUS, SPIRITUOUS, SACCHARINE, AND SALINE FLUIDS, WHICH EXPEDITES THE PROCESS, IMPROVES THE QUALITY, AND CAUSES A GREAT SAVING OF TIME AND FUEL IN EACH, WITH SUITABLE UTENSILS, ON IMPROVED PRINCIPLES, CORRESPONDENT TO THESE INTENTIONS, PART OF WHICH IMPROVEMENTS ARE APPLICABLE TO THE UTENSILS NOW IN USE;" in which said Letters Patent there is contained a proviso, obliging me, the said Richard Shannon, by an instrument in writing under my hand and seal, to cause a particular description of the nature of my said Invention, and in what manner the same is to be performed, to be inrolled in His Majesty's High Court of Chancery within six calendar months after the date of the said recited Letters Patent, as in and by the same (relation being thereunto had) may more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso I, the said Richard Shannon, do hereby declare that my said discovery and application of a new principle for improving the process of brewing, distilling, evaporating, raising, applying, and condensing steam or vapour, from aqueous, spirituous, saccharine, saline, and other fluids; which expedites the process, improves the quality, and causes a great saving of time, fuel, and expence in each, with the invention of a suitable apparatus and utensils on an improved principle, correspondent to these intentions, part of which improvements are applicable to the utensils now in use, are described in the manner following (that is to say):—

By covering and making the mash tun air-tight, and caseing it round under and over with a steam-tight caseing; so as during the mashing and soaking of the malt and grain used, the heat may be preserved or raised and regulated to any pitch by the application of steam both in and between the caseing of the mash tun; by which contrivance the whole of the farina and substance of the grain may be as effectually extracted in one, or at most in two mashings, as is now done in three or four. The steam, conducted by a proper tube or pipe, is to be also employed by sweetening and cleansing all the brewing, distilling, and vinegar making utensils and casks employed in each, &c., so as in future to prevent furring, foxing, &c., even in the inmost crevices. That the coolers for cooling the worts shall have double bottoms. The first, in which the worts are laid, should be graten'd, railed, or latticed bottom, covered with lead, (wood having infinitely less conducting power than metals,) for quickly conducting or transmitting the heat of the worts and wash to the atmosphere or any other cooling medium employed; the outer or under bottom may be made of wood as usual. Between these, cold air or water is to be impelled to expeditiously cool the worts by imbibing and carrying off the heat. The heated water to be employed for the purposes of brewing, &c. and the heated air for the combustion of the fuel under the brewing coppers, stills, &c. by which contrivance air may be passed with a velocity that compensates for it being 850 times lighter than water. By these means the worts can be laid to any thickness, and cooled to any time. This is much facilitated by a metallic pump and flated spiral tube, through which cold air or water is passed during the ascent and descent of the worts. The brewing coppers, stills, &c. are to be long cylinders, double at the ends, and proper arms, doors, and tubes with the usual means of charging and discharging them at present used, and of working them off, cleansing, &c. They are to be of one, two, or three or more diameters long; that is, so many times longer than broad, by which means the heat is brought nearer the centre of the contained fluid. Under which, instead of one immense fire, (as now practised) two or more are to be

placed, in all of which together not a quarter part of the fuel now used is applied. These cylinders laying lengthways over the fires employed to work them, the flame and smoke will be made to pass round them in a spiral direction, under and over, so as to apply every particle of heat to them, and their contents to be heated, that nothing but such part of the smoke as remains unburnt can reach the chimney (placed near the center of the cylindric vessel), the flame and heat being deposited in its circuit by the number of convolutions round and round the cylinder in its passage to the chimney, acting on it and its contents from every inch of the circumference to the center, along its axis. Over each of these brewing coppers, stills, &c. can be placed another copper, still, &c. which, serving as a covering in of the flues of the under one, receives a full heat from them at its bottom, after which the remaining heat, instead of passing into the chimney, makes a circuit round the sides of the upper copper, still, &c., and at length arrives at the chimney. The quick boiling and copious steam of these coppers, stills, &c. surpasses everything that can be possibly conceived, and without destroying the vessels, firework erections, &c. as the great fires at present do, and causes a very great saving of time, fuel, and expence, and the volatile parts of the hops and malt saved by the condensing pipe attached. By the addition of one or two partitions, these long coppers may be divided into two or three short brewing coppers, and the flame of the fires placed near each end of the copper will cause the middle one to boil as soon as either of those under which the fires are placed. By means of proper registers the boil in any of them is regulated. By this contrivance these coppers may be alternately used as occasion requires, either as one or three coppers, or the two worts can be boiled at each end, and the liquor or water in the middle; but innumerable are the advantages derivable from such a vessel. On the same principle the steam boilers, evaporating pans, sugar pans, salt pans, pot and pearlash boilers, soap pans, &c. &c. &c., and all other stills, coppers, boilers, pots, and pans constructed in this manner intended for raising, applying, and condensing steam or vapour in brewing, distilling, or for any other purpose, and for evaporating aqueous, spirituous, saccharine, saline, and other fluids, whether double or single, at the ends, that assumes this shape, and to which the heat is applied in this or similar manner, to which the before-mentioned advantages attach; either in the whole or part correspondent to these intentions, and the respective purposes for which each is designed. As a wash still, either attached to or detached from the spirit still, that is, either with or without the one at top, it enjoys unparallelled advantages in addition to those enumerated: the being able to fill it quite up; there being no danger of its running foul; the commo-

diousness of its figure for a stiring engine; the manner the flame and heat acts on it, reverberated on all sides, uniformily penetrating from every inch of the circumference to the center, along the whole axis of its cylindric length, without destroying it, or the erections round it; it being all bottom, without a resting place for the gross parts to be deposited, from the beginning to the end of the boil, they being here constantly driven to and retained in the coolest part of the still, that is, along its center or axis, have no place to be deposited on, and burnt, as in other stills, which preserves the fluidity of the boiling wash, and the purity of the distilled fluid, and purity is strength, as the spirit will appear heavier or weaker by the hydrometer in proportion to impurity. As a spirit still many of these advantages attach, though used alone without the addition of one at top of it, and the larger scale these stills are made on, the more beneficial will it be to the rectifier, either for rectifying the raw spirits in making gin, &c., while spirits of wine or cordials are distilling in the upper still with the same fire and attendance. Indeed, there is no part of the process of distilling but to which they advantageously apply, whether the distilled fluid is aqueous, spirituous, or saline. With respect to the West Indies, where fuel is always dear and water often scarce, these stills and refrigerateries will be a treasure, as the condensation and refrigeration can be performed in them with but little fuel, and with or without water. To receive and condense the prodigious cloud of steam or vapour that necessarily arises from these stills, and (which no worm could receive and condense) I have invented a new refrigeratory or condenser to supply the place of the old worm. It is of less receptive capacity and greater condensing surface, broad and flat in each fold, by which the heated steam or vapour is brought in immediate contact with the cooling surface, through each fold of which it uninterruptedly ascends, agreeable to its own levity and the phenomina of vapour and all vaporious exhalations, which is to rise and float in the air, and not as in the present practice of distilling, forced, after ascending into the arm of the still to descend through each convolution or round of the worm, contrary to its specific gravity through a column of air heavier than itself. In this refrigeratory the pressure of the atmosphere is averted, by making the distilling fluid act as valves; by which means and those enumerated, from the same extent of surface and in the same or less time double, treble, or even quadruple the quantity of vapour or steam is raised, condensed, and distilled off, with a heat below that now used, and the volatile parts now dissipated in the air filtered through the condensed fluid and saved, to the great improvement of the quality and strength of the distilled spirit, &c. The volatile parts of all fluids condensed in this refrigeratory, are not only saved, but they come off infinitely cooler

than usual, and that struggle proceeding from the action and reaction of the arising vapour within the still, and ascending air of the atmosphere from without, which by passing up the old worm at the part they meet in cause the point of stagnation, where they counterballance each other; to overcome this resistance a heat above the boiling point is at present unavoidably applied, all which is compleatly obviated in this new refrigeratory, and the atmosphere, which is the solvent and recepticle of all volatile bodies, prevented from absorbing anything here. This refrigeratory consisting of two broad and proportionably long metallic plates, formed into a zig-zag fold or folds, the interstice between which is the flatted tube in which the condensation is performed; the fold near the lower end in which the arm of the still enters to convey the steam or vapour is the chamber of reception, under which is the division forming the valve of separation, both of which together forms the condensing valve, where a few thinner folds than these above (in which the condensation is performed) commence for compleating the refrigreation of the condensed fluid, which drain or runs into a round tube (in which there is a valve) that conveys it out through the worm tub, as in the common worm. The steam or vapour rising or expanding through the number of folds above, numerous in proportion to the required effect, is terminated by a tube at top, to carry off the elastic air, and in condensible parts, which descends without the upper folds, (and as before mentioned,) and is inserted in the first of the lower folds, and filtered through the condensed fluid, before it makes its exist. By the addition of a third correspondent plate a double refrigeratory is formed, and by adding a fourth they are commodiously separated by a third interstice, through which air or water may be passed for cooling them. This double refrigeratory may be used without a worm tub; it may be made to serve two stills, by placing it in a worm tub, or made to condense for one or two stills, without a drop of water, by passing the current of atmospheric air (instead of water,) that supplies the combustion of the fire, for supporting it under its correspondent still or stills, or finally it may be made to condense, for both the wash and spirit still at once, in more ways than one. Attemperater: this epithet, as here applied, is only another word for cooler. Either the single, double, or triple new refrigeratory may be rendered eminently useful to malt distillers and brewers of every description, for cooling the worts with the utmost dispatch, to the tempreture of the atmosphere, or to any required pitch for fermentation in any given time, either by air or water, and when employed in this way should be called attemperaters. First, by filling the middle interstice with the hot worts from the under tun or under back, and obliging the air consumed by the fires under the copper or still to pass

through the two outer folds. Secondly, by filling the two outer interstices with hot worts, and passing the air through the inner or middle fold. Instead of air, water may be applied in a similar manner. Lastly, by placing the single, double, or triple refrigeratory in a worm tub, supplied in the usual way with water, as practised by the distillers, (or in a round square or oval vatt), and filling up the refrigerators with hot worts, where they must quickly deposit their heat, and are soon brought to the tempreture of the atmosphere (or even lower) by a continual supply of cold air or water; the hot water serving to supply the copper for the next mash. The refrigeratory or attemperatures are conveniently cleaned after the worts by steam, and much more effectually than the coolers has hitherto been, no other form admitting of being so quickly and commodiously cleaned; as may also close mash tuns. The major part or the whole of these utensils are to be made of metal, stone, wood, glass, earthenware, and brickwork, and the usual solder and cements for plaistering, lining, and uniting them are to be employed. These improvements comprize uncommon expedition in boiling, mashing, and cooling, evaporating, distilling, and condensing, and a saving of time, fuel and expence, exclusive of the convenience and avantage of turning night work into day work, preserving cleanliness and preventing foxing, and of making that useful agent, fire, subservient to all these purposes, and at the same time the instruments of heat and cold, divesting it of its destructive influence on the utensils.

In witness whereof, I, the said Richard Shannon, have hereunto set my hand and seal, this Thirty-first day of July, in the year of our Lord One thousand seven hundred and ninety-eight.

R. SHANNON. (L.S.)

AND BE IT REMEMBERED, that on the same Thirty-first day of July, in the year above mentioned, the aforesaid Richard Shannon came before our Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and everything therein contained, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute in that case made and provided.

A. POPHAM.

Inrolled the same Thirty-first day of July, in the year above written.

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