

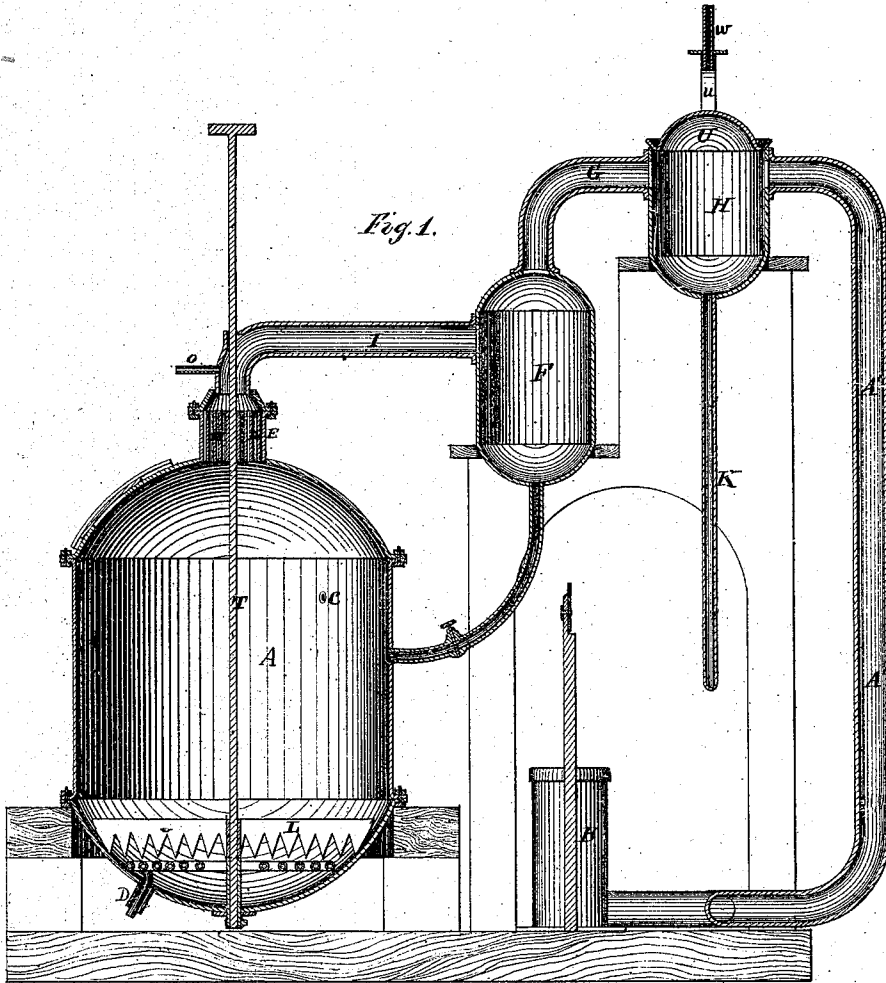
T. Steers, Jr.,

3, Sheets, Sheet 1.

Vacuum Pan.

No. 105381.

Patented July 12, 1870



Witnesses
O. B. Kane,
Chattanooga

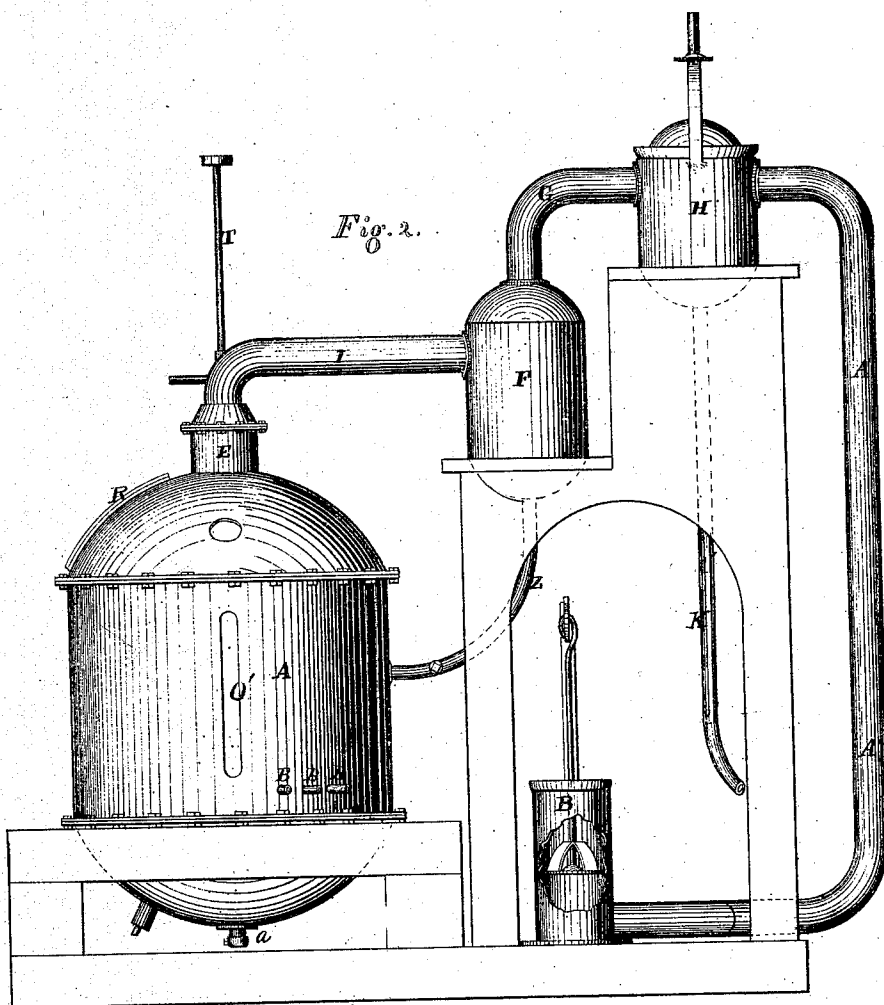
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United States Patent Office.

THOMAS STEERS, JR., OF RICHMOND, VIRGINIA, ASSIGNOR TO JOHN E. MULFORD, OF SAME PLACE.

Letters Patent No. 105,381, dated July 12, 1870.

IMPROVEMENT IN APPARATUS FOR DISTILLING AND EVAPORATING EXTRACTS, SALINE SOLUTIONS, &c.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, THOMAS STEERS, JR., of Richmond, in the county of Henrico and State of Virginia, have invented a new and valuable Improvement in Apparatus for Manufacturing Dye, Saccharine Salts, or extracts of vegetable substances; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a vertical section of my apparatus.

Figure 2 is a side elevation, and.

Figure 3 is a plan view thereof.

On the eighteenth day of June, in the year one thousand eight hundred and sixty-six, this applicant, who was then a temporary inhabitant of Melbourne, in the county of Richmond, Canada East, obtained, from the Province of Canada, Letters Patent for what was denominated therein "a new and useful apparatus for manufacturing dye, saccharine salts, or extracts of vegetable substances," which said apparatus was and is the same in all respects as the device herein described, saving and excepting the pumps B and pipes A A and X, which said pumps and pipes are intended to serve as improvements upon the apparatus patented as aforesaid.

A of the drawing represents a large vessel or evaporator, in which the liquor is placed for manufacturing.

B B represent pipes to admit steam from a boiler into the worms C C C, which said worms are arranged within the evaporator in the manner shown on fig. 3.

I arrange regulating cocks in these pipes B, respectively, to govern the amount of steam to be admitted to the evaporator.

The worms C are three in number. They are united together at their lower ends within the exhaust-pipe D in the bottom of the evaporator.

The letter a represents a discharge-cock and pipe in the bottom of the evaporator, and c, a supply-pipe in the side thereof.

E represents a drum or dome, securely fastened in the top of the evaporator, as shown, and

I is a pipe connecting said drum with the receiver next mentioned.

F represents the receiver, adjusted or arranged upon a platform of the frame, as shown.

This receiver is connected with the drum E by the

pipe I, and with the condenser H by the pipe G, in the manner represented on figs. 1 and 2.

H represents the condenser, arranged upon the upper platform of the frame.

The dome or drum E surrounds a series of suction-pipes which are arranged in the manner shown on fig. 1, and marked n on the drawing.

The letter o represents a jet-pipe, to admit steam from the boiler in the top of the suction-pipes, and thereby to create a draught upward for the vapors in the evaporator.

The letter U represents a dome or crown of copper, which serves not only as a cover for the condenser, but also as a means for condensing the vapors therein.

It will be observed that a flanch, s, arises from and surrounds the top of the condenser, forming a circular dish around the bottom of the crown U.

I also arrange a bridge for a water-cock over the condenser, as shown on the drawing, and marked u, and arrange therein a pipe and water-cock, W, immediately above the center of the crown U.

This arrangement enables the operator to direct a stream of cold water upon the crown U at will, and thereby aid in condensing the vapors within the condenser.

A' A' is a pipe leading from the condenser downward to the pumps B, in the manner shown.

B represents two pumps, worked by an ordinary walking-beam, for the purpose of exhausting the air from the vessels above described.

K represents a discharge-pipe leading from the bottom of the condenser to a suitable tank, when its lower end is submerged in water.

Z represents a pipe leading from the bottom of the receiver to the evaporator, the object being to convey liquid from the receiver to the evaporator in case of an overflow.

In the side of the evaporator I usually affix a gauge and a thermometer, one of which is represented on fig. 2 by the letter O.

I also arrange a man-hole in the top of said evaporator, with a sliding door properly secured. This man-hole is marked R on the drawing.

The letter T represents a rotating shaft, with a belt drum on its upper end, and with its lower end arranged in a suitable socket in the bottom of the evaporator. This shaft, below the suction-pipes, is made in a quadrangular form, to receive and operate the rake next mentioned.

The letter L represents a floating rake, having a square opening in the center of its head, adapted to

fit on the shaft T. This rake is intended to float on the surface of the liquid, and to rotate with the shaft, the object being to keep the liquid in motion, and thereby prevent the same from burning on the worms while in process of manufacture.

I claim as my invention—

1. The apparatus herein described, having evaporator A, receiver F, condenser H, pipes E G A' A' K and Z, pumps B, worms C, suction-pipes *n*, jet *o*, shaft T, and rake L, when constructed and arranged substantially as and for the purposes specified.

2. The copper crown U, in combination with the receiver F, bridge *u*, water-cock W, and flanch *s*, when constructed and arranged substantially as and for the purpose described.

3. The suction-pipes *n*, when arranged in the dome of an evaporator, as described, and combined with the jet-pipe *o*, as and for the purpose specified.

THOMAS STEERS, JR.

Witnesses:

EDW. P. MASI,
D. D. KANE.