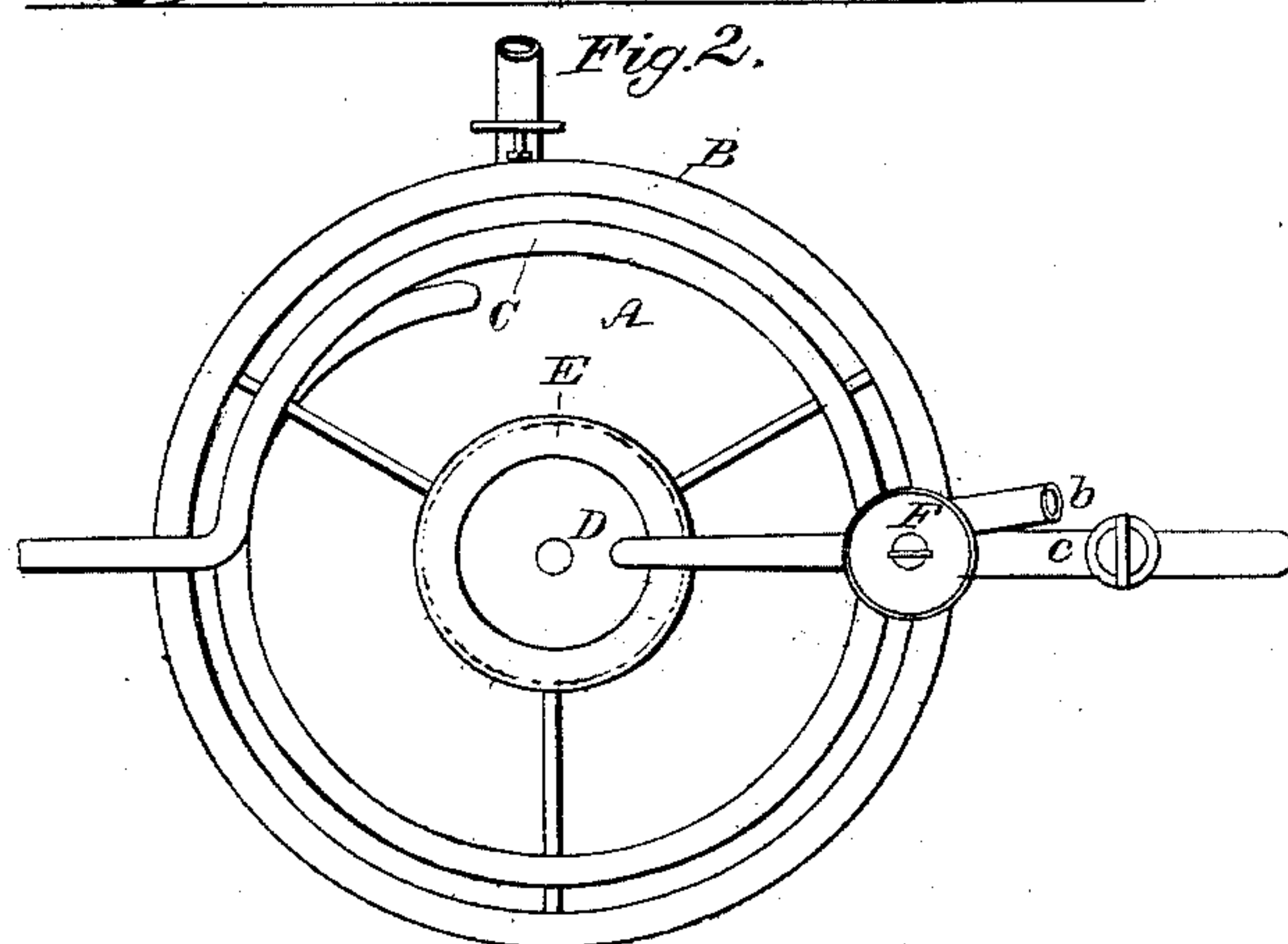
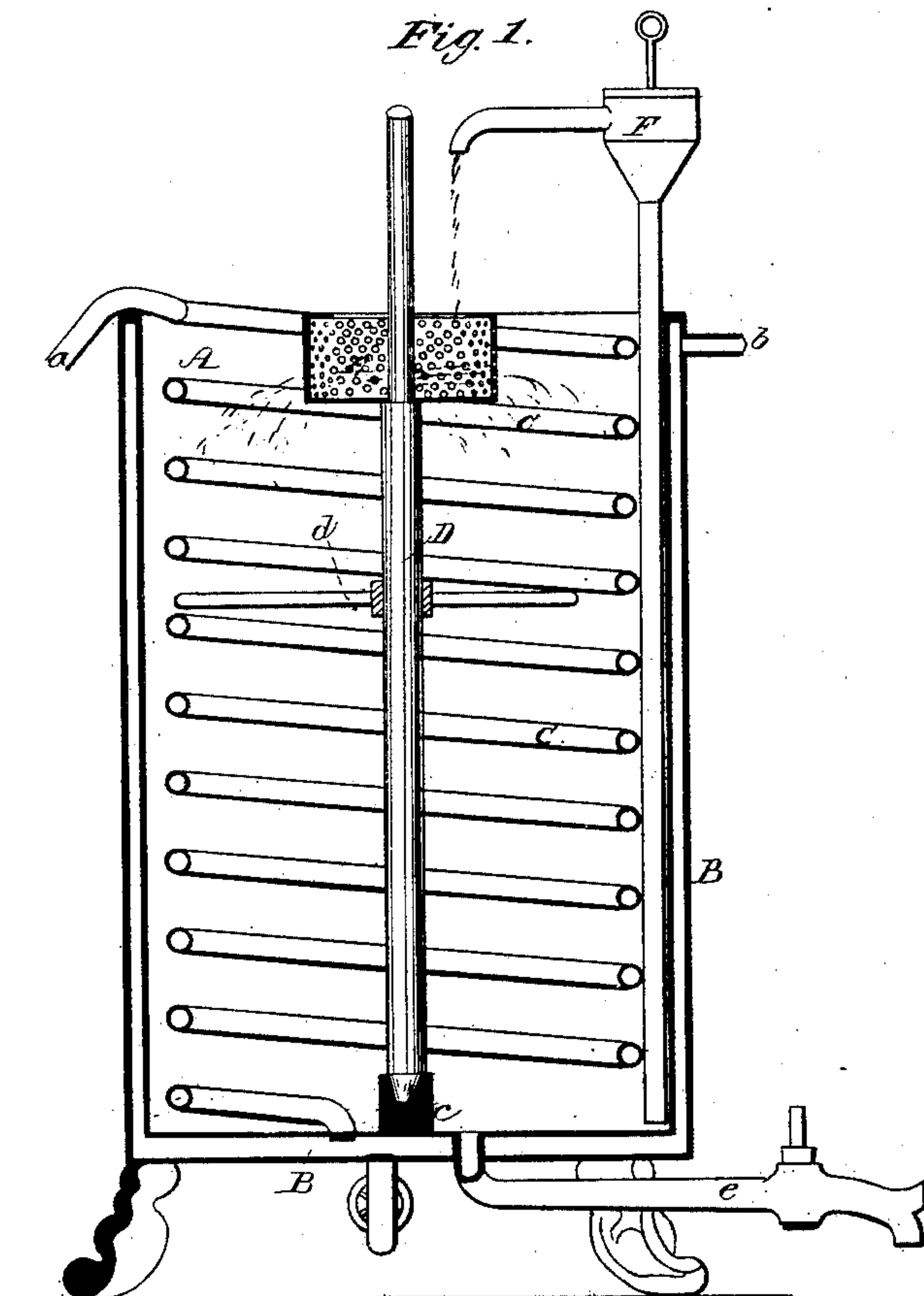


E. J. WOOLSEY.
Evaporating Apparatus.

No. 11,801.

Patented Oct. 10, 1854.



UNITED STATES PATENT OFFICE.

EDWARD J. WOOLSEY, OF ASTORIA, NEW YORK.

IMPROVEMENT IN THE CONSTRUCTION OF SUGAR-BOILERS.

Specification forming part of Letters Patent No. **11,801**, dated October 10, 1854.

To all whom it may concern:

Be it known that I, EDWARD J. WOOLSEY, of Astoria, in the county of Kings and State of New York, have invented a new and improved apparatus for evaporating cane-juice, sirups, brine, or other juices or solutions; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of the apparatus. Fig. 2 is a plan of the same.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in an apparatus the principal parts of which are a centrifugal distributor and certain moderately-heated surfaces within, between, or in relation to which the said distributor is arranged in such a manner as to throw the juice, sirup, or solution against or upon them in a shower or minutely subdivided state. The juice, sirup, or solution, being thus distributed, is exposed in minute particles to the action of the heated atmosphere within or near the heated surfaces, and, after striking the said surfaces, trickles over them in a very thinly-diffused state, and a very rapid evaporation is thus enabled to be produced while the liquid is at a low degree of heat, which is of great importance in the evaporation of cane-juice or sirups.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is a deep open-topped pan surrounded by a steam-jacket, B, which also extends under its bottom. Within the pan is a coil, C, of steam-pipe, which communicates with the steam-jacket in such a way that a constant circulation of steam may be kept up, the steam either entering the coil at *a*, passing through the coil and jacket, and escaping at *b*, or taking the opposite course. In the center of the pan there is a vertical shaft, D, resting in a step, *c*, at the bottom of the pan and working in a guide-bearing, *d*, above. This shaft carries just below the level of the top of the pan

the perforated cylinder E, which I term the "centrifugal distributor," similar to the cylinder of what is known as the "centrifugal depurator," used in draining sugar, and is intended to receive a rapid rotary motion through any suitable agency. The juice, sirup, or solution is fed continually into the cylinder, and the centrifugal force given to it by the revolution of the cylinder causes it to be extruded through the perforations and scattered all round in a fine shower against the upper part of the coil C and the interior surface of the pan, from which it trickles gradually down toward the bottom of the pan, from whence it is intended to be forced up again into the reservoir by the continuous action of either a pump, F, an Archimedean screw, or any other device commonly employed for raising fluids. The continuous operation of distributing, raising, and redistributing continues until the juice, sirup, or solution is brought to any required density, when it is drawn off through a pipe, *e*, at the bottom of the pan, which is provided with a cock for the purpose, and when necessary is afterward submitted to a final evaporating process in other apparatus till crystallization takes place. The evaporating process may be expedited by forcing a stream of heated air through the pan; but this forms no part of my invention.

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

An apparatus consisting of a centrifugal distributor, E, arranged within a heated pan, A, or otherwise arranged relatively to heated surfaces which are equivalent to the heated interior surface of the pan or of the coils contained therein, so as to throw the juice, sirup, or solution to be evaporated in a shower or minutely subdivided state on the said heated surfaces and allow it to trickle down the sides of the pan or the said heated surfaces in a thinly-diffused state, substantially as set forth, for the purpose of evaporating its moisture.

EDWARD J. WOOLSEY.

Witnesses:

S. H. WALES,

J. W. HAMILTON.