

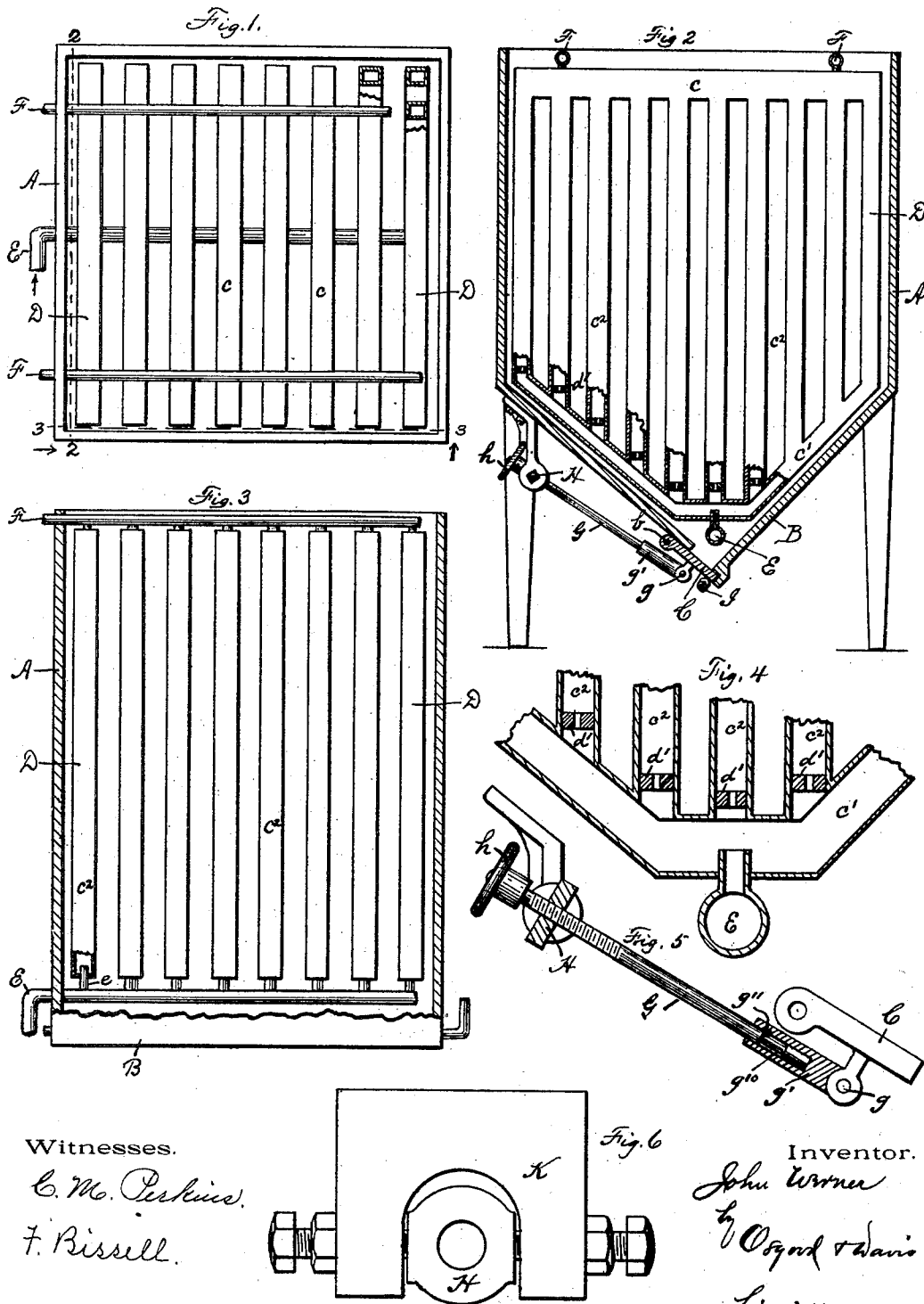
No. 699,730.

Patented May 13, 1902.

J. WERNER.
SYRUP COOLER.

(Application filed Feb. 20, 1899.)

(No Model.)



Witnesses.

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JOHN WERNER, OF ROCHESTER, NEW YORK.

SYRUP-COOLER.

SPECIFICATION forming part of Letters Patent No. 699,730, dated May 13, 1902.

Application filed February 20, 1899. Serial No. 706,215. (No model.)

To all whom it may concern:

Be it known that I, JOHN WERNER, a citizen of the United States, and a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Syrup-Coolers, of which the following is a specification.

This invention relates to syrup-cooling tanks in which a series of pipe-sections are arranged at such distance apart that the syrup has free passage around them, cold water being carried through the pipes for the purpose of cooling the same.

The invention consists in the construction and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of the tank, a portion being shown in section. Fig. 2 is a vertical section of the same on the line 2 2 looking in the direction of the arrow at the bottom in Fig. 1. Fig. 3 is a similar section on the line 3 3 looking in the direction of the arrow at the right in Fig. 1 and including a section of a detail. Fig. 4 is an enlarged sectional view of the lower part of one of the pipe-sections. Fig. 5 is a side elevation of the devices for opening and closing the discharge-valve, and Fig. 6 is an elevation of a detail.

A indicates the tank, which may be square in outline, as shown, but has a V-shaped bottom B and is provided with a discharge-opening through which the syrup may be discharged. This opening is covered by a valve C, that swings on a pivot *b* and is operated by means which will be hereinafter described. This valve preferably extends the full length of the tank, so that the cooled syrup may be discharged quickly and freely.

D D D are a series of pipe-sections which may be gridiron-like in form and are arranged parallel to each other and stand vertically in the tank and are separated from each other by clear spaces. Each of these sections consists of two headers *c c'* and intermediate connecting vertical pipes *c² c² c²*, and the latter are square in cross-section, by which means a greater cooling-surface is attained and uniform distances are produced between the pipes, whereby the cooling effect upon the syrup is more even throughout the mass.

E is the induction water-pipe, connecting

with the bottom of each pipe-section by means of the nipple *e*, and F F are the discharge-pipes, connecting with each pipe-section at the top. The water entering at the bottom circulates through all of the layers of pipes at once. In order to make this action more effective and in order to bring the cold water from the main pipe into all the vertical pipes substantially at the same moment and with uniform force and diffusion, I employ a peculiar arrangement, as follows: *d'* is a perforated plug in or near the bottom of each pipe *c²*. The sum of the areas of the perforations through the plugs in each pipe-section equals or is slightly less than the area of the inlet-nipple *d* of that section. The outlet-pipes are of such size as to give free outlet flow. Each nipple *d* connects with the inlet-pipe E, which last is of ample area to give full and free inlet for a constant flow through the device, so that the cold water entering the pipe E has simply to run across the machine to charge all the pipes *c²* at once and to absorb the heat from the syrup in the tank A and carry off the warmed water through the outlets F. I have connected the cold-water pipe with the first pipe-section and then have connected all the pipe-sections by nipples, which compels the water to circulate from one pipe-section to another in succession, and thus the water becomes gradually heated in its passage, so that the temperature in the tank is unequal. By injecting the cold water into all the pipe-sections at one and the same time the temperature is uniform.

G is a screw-rod pivoted at *g*, as hereinafter described, to the swinging valve C, its outer end extending through a pivoted box or bearing H and provided with a head or handle *h*, by which the rod G can be turned. The box H is pivoted or journaled so as to turn axially in a frame or bearing K, and the screw-rod G passes through the box as its nut. As the rod is turned it is moved out or in, thereby opening or closing the valve, and it is prevented from binding, as the box turns on its axis to accommodate the position of the rod.

I is an eccentric lock fastened to the tank A and resting under the lower edge of the valve and serving to close it up tightly against its seat. Its action is supplementary to that of the screw-rod, and its object is to fasten

the valve tightly in place after the screw-rod has closed it, and thus prevent undue strain upon the rod. This eccentric is removable and is applied only when the valve is closed 5 for fastening it tightly in place. When the valve is to be opened, the eccentric is removed from place, and the valve can then be opened to any desired extent. The lower end of the screw-rod G preferably rests in a socket g', 10 which is pivoted at g to the valve, as above stated. The rod has a circumferential groove g¹⁰ within the socket, and a cross-pin g¹¹, resting in the groove, permits revolution of the rod in the socket, but prevents withdrawal 15 of the rod from the socket, but allows a slight longitudinal movement of the rod with reference to the socket, so that after the valve C is pressed to its seat by the screw-rod G the eccentric I may move the valve still closer to 20 the seat without straining the box or bearing H.

What I claim is—

1. In a syrup-cooler, a tank, suitable cooling devices in said tank; a swinging valve 25 for closing the outlet from the bottom of said tank and a screw-threaded rod for operating

said valve passing through a pivoted nut attached to said tank.

2. In a syrup-cooler, the combination of a tank, suitable cooling devices in said tank, a 30 swinging valve for closing an opening at the bottom of said tank, screw-operated means for closing said valve and an independent cam device for forcing said valve upon its seat. 35

3. In a syrup-cooler, the combination of a tank, suitable cooling devices in said tank, a swinging valve adapted to close and open at the bottom of said tank, a socket g' pivoted to said valve, a rod resting in said socket and 40 having a screw-threaded portion, a bearing for said screw-threaded portion attached to said tank, means permitting the revolution of the rod in said socket and a slight longitudinal movement of said rod with reference 45 to the socket, and an independent locking device for locking said valve upon its seat.

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Witnesses:

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