No. 647,798. Patented Apr. 17, 1900.

C. BOUTON & C. S. BEDIANT.

EVAPORATING PAN.

(Application filed Dec. 24, 1898.)

(No Model.)

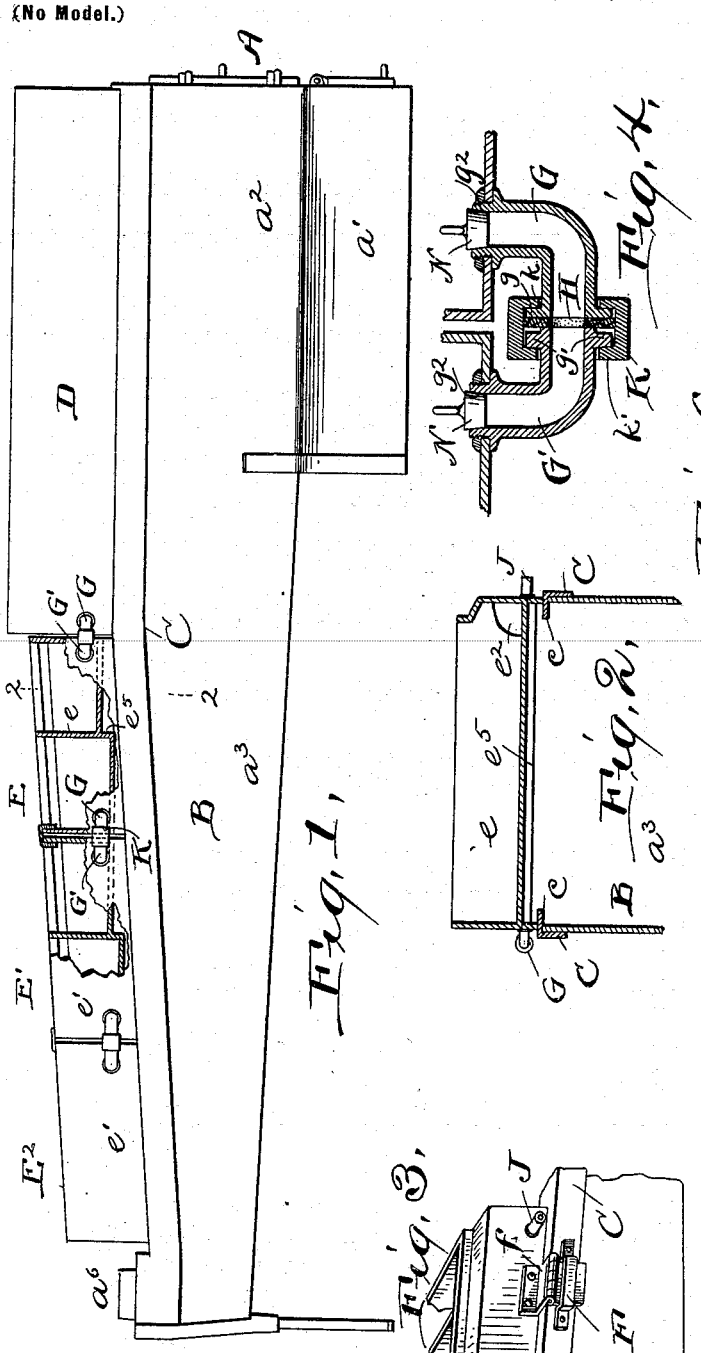

Fig. 1,

Fig. 4,

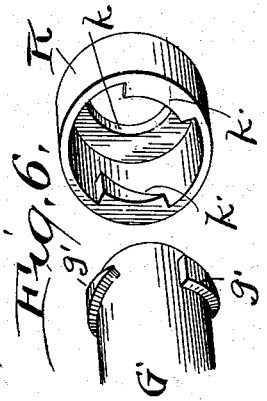

Fig. 6,

Fig. 2,

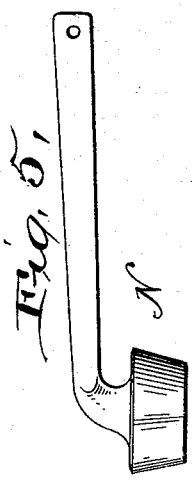

Fig. 5,

Fig. 3,

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UNITED STATES PATENT OFFICE.

CHARLES BOUTON AND CLAYTON S. BEDIANT, OF HUDSON, OHIO; SAID BEDIANT ASSIGNOR TO SAID BOUTON.

EVAPORATING-PAN.

SPECIFICATION forming part of Letters Patent No. 647,798, dated April 17, 1900.

Application filed December 24, 1898. Serial No. 700,247. (No model.)

To all whom it may concern:

Be it known that we, CHARLES BOUTON and CLAYTON S. BEDIANT, citizens of the United States, residing at Hudson, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Evaporators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

Our invention relates to evaporators which are especially adapted for boiling and evaporating saccharine juices, such as maple-sap, to convert them into syrup or sugar. The invention belongs to the same class of evaporators as does that which is described and shown in Letters Patent No. 615,131, granted November 29, 1898, to C. S. Bediant, and is in a sense, an improvement on that evaporator.

The objects of the invention are to strengthen and render more durable the furnace which forms a part of the evaporator, to render the entire device more efficient, and to improve the connection between the several evaporating-pans.

With these ends in view the invention consists in the construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation, partly in section, of an evaporator embodying our invention. Fig. 2 is a transverse vertical sectional view on line 2 2 of Fig. 1. Fig. 3 is a perspective view of a part of the opposite side of the device to that shown in Fig. 1. Fig. 4 is a horizontal sectional view of one of the connections between adjacent pans. Fig. 5 is a side view of one of the plugs for closing the mouths of said connecting-pipes. Fig. 6 is a perspective view of the collar and adjacent end of the pipe with which the collar engages.

Referring to the parts by letters, A represents the furnace, having the usual ash-pit a' and fire-pot a^2. It has also a rearwardly-extended fire-chamber a^3, which is in open communication with and forms a continuation of the fire-pot. The top of the furnace is closed by the evaporating-pans, to be hereinafter referred to. The top edges of the sides B of the rearwardly-extended fire-chamber incline downwardly at a slight angle, substantially as shown, and the top edges of the combustion-chamber are substantially horizontal. Angle-bars C are secured to the sides of the furnace near their top edges by rivets or otherwise, and they are bent over the top edges of said walls, substantially as shown. The bent-over flanges c of the angle-irons serve as the supports for the evaporating-pans, and the angle-irons themselves serve to strengthen the sides of the furnace and to prevent them from becoming warped by the heat.

An evaporating pan or pans D of the ordinary construction rest upon the horizontal top of the furnace, or rather upon the inwardly-bent flanges c of the angle-irons on the upper edge of the fire-pot. Other evaporating-pans E E' E^2 rest upon the inwardly-turned flanges of the angle-irons, which are secured to the inclined sides of the fire-chamber. Each of these pans is divided by the transverse partition e into two compartments, the bottoms of which are horizontal, but at different levels, that one which is farther from the pan D being the lower. The lower edges of the sides e' of these pans, which rest upon the inclined angle-iron flanges, are themselves inclined to correspond with the inclination of said flanges wherefore the bottoms of the two compartments are held in substantially-horizontal positions. The two compartments of each pan communicate with each other through a hole e^2 in the dividing-partition near one side of the pan. The particular means for hinging the pan consists of a flat bar f, to which the pan is hinged, and a strap F on the side of the furnace, which receives said bar. To the other side of the pan an outlet-pipe G is connected with the lower of the two compartments of said pan. An inlet-pipe G' is connected with the corresponding side of the next pan and with the upper compartment thereof. These two pipes extend from the pans horizontally, and their outer ends are bent toward each other, so that they may come in contact. They are fastened together, with a rubber gasket H between them, by means of a sleeve K, which embraces the end of one of the pipes G, and is prevented from being moved off of said pipe by an external flange g on the pipe and an internal flange k upon itself. The adjacent end of the other pipe is provided with two or more beveled lugs g', with which oppositely-

beveled internal lugs k' on the collar are adapted to engage, whereby the turning of said collar to effect such engagement causes the ends of the pipes to be drawn toward each other and against the interposed gasket.

The sap flows from the lower compartment of one pan through these pipes into the upper compartment of the next, thence through the hole e in the partition of said pan, thence through corresponding pipes to the next pan, and so on. The flow of the sap may be automatically controlled by a valve and a float similar to those shown in the Bediant patent before referred to, but not shown herein. In the side of the pans upon which the hinge is placed is an outlet-pipe or outlet-pipes J, above the normal level of the sap. When the evaporating operation is completed, the two pipes G G′ are disconnected and the pans are swung upward on their hinges and the sap permitted to flow out of the pipes J, last referred to. Before the connection between adjacent pans—viz., between pipes G and G′—is broken it is necessary to close said pipes, so that the sap cannot escape. Heretofore this has been effected by stop-cocks in said pipes. These, however, are expensive, and to avoid the necessity for this expensive construction we construct the mouths of said pipes with a taper, as at g^2. We also provide tapered plugs N, which fit tightly into said mouths, and before disconnecting these pipes G G′ these plugs are pushed firmly into the inner tapered ends of the pipes.

The described construction is one which to the fullest extent utilizes the heat of the furnace, because said heat in passing to the stack-opening a^6 strikes against that part e^5 of the upper wall of the lower compartment in each pan which projects below the bottom of the upper compartment, which increases the heating-surfaces for the heat to act upon, and it also impedes the direct passage of the heat to said stack. The means described for connecting and disconnecting the pipes G G′ are simple, cheap, and easily operated, and the tapered plugs afford cheap and efficient means for preventing the escape of the syrup when said pipes have been disconnected. The peculiar form of the tops of the side walls of the fire-chamber and the angle-irons secured thereto renders said walls strong and durable and well able to withstand without injury any accidental blows or knocks. The shape of the evaporating-pans is such that they coöperate with the sides of the fire-chamber to prevent the escape of heat and to utilize that heat as much as possible, and all of these various features coöperate admirably to secure in the highest degree the results for which the evaporator is designed.

Having described our invention, we claim—

In an evaporator, a furnace having a rearwardly-extended fire-chamber, and a series of independent evaporator-pans resting upon the side walls and hinged to one of them, combined with inlet and outlet pipes secured to adjacent pans and having their outer ends bent toward and into contact with each other, one of said pipe ends having an external annular flange, and the other external inclined lugs, and a coupling-collar embracing the first-named pipe and having an inwardly-turned annular flange for engagement with the flange on said pipe, and inclined lugs for engagement with the inclined lugs on the other pipe, substantially as specified.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

CHARLES BOUTON.
CLAYTON S. BEDIANT.

Witnesses:
GEO. P. DENMAN,
M. C. READ.