

(No Model.)

A. F. GAIENNIE.  
APPARATUS FOR TREATING JUICE AND VAPOR.

No. 564,481.

Patented July 21, 1896.

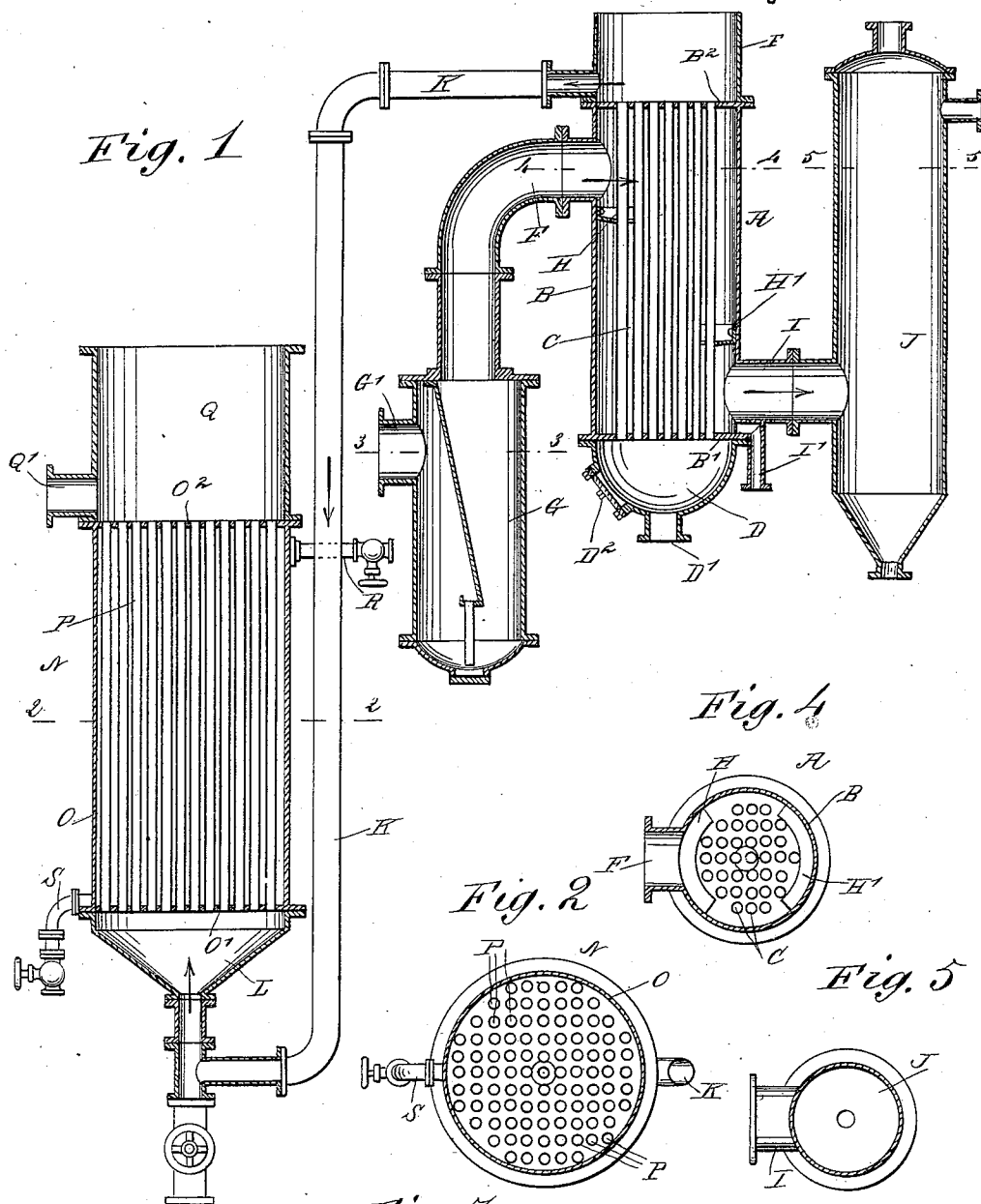


Fig. 1

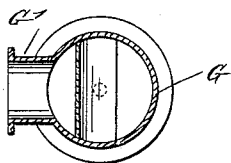
Fig. 4

Fig. 2

Fig. 5

Fig. 3

WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ALPHONSE F. GAIENNIE, OF LAFOURCHE, LOUISIANA.

## APPARATUS FOR TREATING JUICE AND VAPOR.

SPECIFICATION forming part of Letters Patent No. 564,481, dated July 21, 1896.

Application filed July 16, 1896. Serial No. 556,102. (No model.)

*To all whom it may concern:*

Be it known that I, ALPHONSE F. GAIENNIE, of Lafourche, in the parish of Lafourche, (near Thibodaux P. O.,) Louisiana, have  
5 invented a new and Improved Apparatus for Treating Juice and Vapors, of which the following is a full, clear, and exact description.

The invention relates to the manufacture of liquid from cane-juice; and its object is to  
10 provide a new and improved apparatus for treating sugar-cane juice and vapors from the vacuum processes of evaporation in such a manner that the vapors are condensed while heating the cane-juice, the latter then being  
15 superheated and then clarified at a comparatively low cost.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then  
20 pointed out in the claim.

Figure 1 is a sectional side elevation of the apparatus. Fig. 2 is a sectional plan view of one of the heaters, on the line 2 2 of Fig. 1. Fig. 3 is a similar view of the catch-all, on the  
25 line 3 3 of Fig. 1. Fig. 4 is a sectional plan view of the condenser, on the line 4 4 of Fig. 1; and Fig. 5 is a sectional plan view of the water condenser, on the line 5 5 of Fig. 1.

The improved apparatus, as illustrated in  
30 Fig. 1, is provided with a condenser A, for condensing the vapors produced from the vacuum processes of evaporation; and this condenser is provided with a shell B, provided with heads B' and B<sup>2</sup>, carrying pipes C, open-  
35 ing at their lower ends into a chamber D, attached to the shell B, and provided with an inlet-pipe D', through which passes the cane-juice from the mill to the said chamber. The latter is also provided with a manhole D<sup>2</sup> for  
40 giving access to the pipes C. The upper ends of the pipes C discharge into a tank E attached to the top of the shell B. Into the latter opens a vapor-pipe F at or near the upper end of the shell, the said vapor-pipe F being  
45 provided with a catch-all G of any approved construction, and provided with an inlet-pipe G', through which pass the vapors from the vacuum process of the evaporation, the vapors finally passing into the upper end of the  
50 shell to surround the pipes C and give off their heat to the juice flowing upward through

the said pipes to condense the vapors and at the same time heat the juice.

The vapors passing into the shell B at the upper end flow downward and are directed on  
55 the pipes C by baffle-plates H and H', attached to the inside of the shell B at opposite sides thereof, as is plainly indicated in Figs. 1 and 4. The vapors in nearly condensed state pass from the lower end of the shell B through a  
60 pipe I to a water-condenser J, of any approved construction, to be finally condensed. A pipe I' leads from the bottom of the pipe I, to carry off any condensed liquid from the shell B.  
65

The juice passing through the pipes C accumulates in the tank E and flows from the latter through a pipe K into a chamber L, forming the lower end of a superheater N, provided with a shell O having the heads O' and O<sup>2</sup> and pipes P set in the said heads.  
70 The lower ends of the pipes P open into the chamber L, and the upper ends of the said pipes open into a tank Q, provided with an outlet-pipe Q', connected with settling-tanks,  
75 which pass the juice after it is superheated and clarified to the said tanks.

Into the upper end of the shell O leads a steam-pipe, connected with a suitable source of steam supply to fill the shell O with steam,  
80 to heat the juice passing through the pipes P. The lower end of the shell O is provided with a valved outlet-pipe S for carrying off the water of condensation accumulating in the said shell.  
85

Now, it will be seen that by the arrangement described, the vapors from the vacuum processes pass into the shell B and flow down the same, to give off their heat to the juice flowing in an upward direction in the pipes C,  
90 so that the vapors are condensed and the juice is heated up to about 130° to 140° Fahrenheit, so as to be in a proper condition for additional heating in the heater N.

The temperature of the vapors, if not fully  
95 condensed, is lowered to such a degree that they will readily condense in the water-condenser J.

Now, it will be seen that by this arrangement the processes of condensing the vapors, 100 heating and clarifying the juice, is carried on in a very economical manner.

The vapors used in this invention are those produced by the evaporation in the vacuum-pans of sugar processes, said pans being connected to discharge these vapors into the

5 pipe G.

It will be understood that since the condenser J is used to condense those vapors which are not condensed in the shell B, the said condenser J may be properly termed an

10 "auxiliary condenser," and this term will be used in the claim.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

15 The herein-described apparatus for treating juice and vapors, consisting of a catch-all G, a shell B with which the same communicates, heads B' and B<sup>2</sup> respectively in each

end of the shell, the heads forming tanks D and E respectively adjacent to the heads, 20 tubes C passing from one head to the other, an auxiliary condenser J communicating with the shell and receiving the vapor from the catch-all G through the medium of the shell B, a pipe K communicating with one end of 25 the shell A, a heater-shell N communicating with the pipe K, two heads O' and O<sup>2</sup> in the heater-shell, and tubes P passing from one of the heads O' or O<sup>2</sup> to the other, the heater-shell N having two sets of inlet and outlet 30 orifices, substantially as described.

ALPHONSE F. GAIENNIE.

Witnesses:

OZÉMÉ NOQUIN,

CHARLES J. COULON.