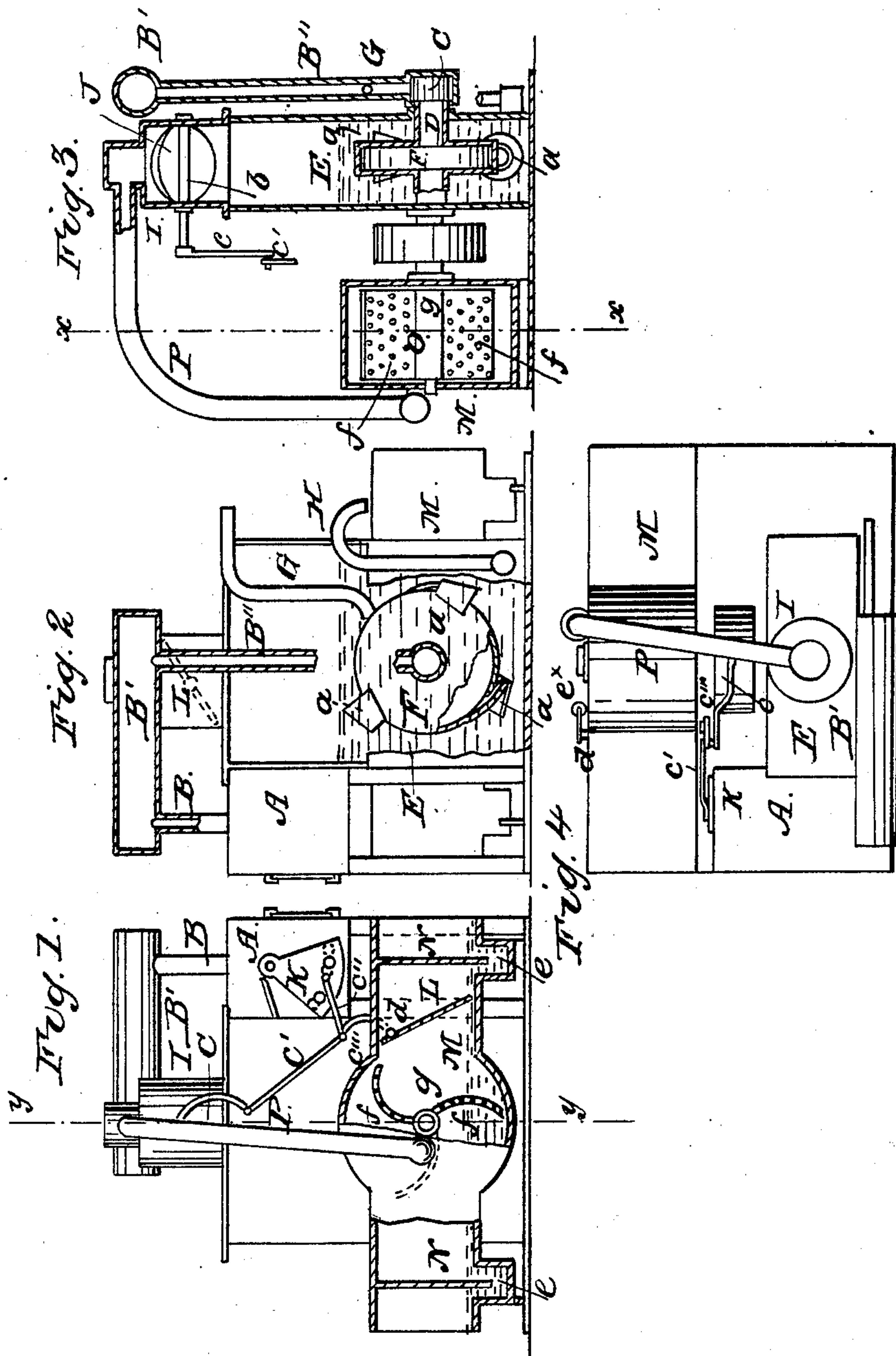


E. SKELLY.
Treating Cane Juice.

No. 82,164.

Patented Sept. 15, 1868.



Witnesses
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EVAN SKELLY, OF PLAQUEMINE, LOUISIANA.

Letters Patent No. 82,164, dated September 15, 1868.

IMPROVED APPARATUS FOR IMPREGNATING CANE-JUICE AND OTHER LIQUIDS WITH SULPHUROUS-ACID GAS.

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, EVAN SKELLY, of Plaquemine, in the parish of Iberville, and State of Louisiana, have invented a new and improved Apparatus for Incorporating Gases with Liquids; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved device for incorporating or impregnating liquids with gases, and is more especially designed for impregnating sugar-cane juice with sulphurous-acid gas.

In the accompanying sheet of drawings—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, fig. 3.

Figure 2, a side view of the same, partly in section.

Figure 3, a vertical section of the same, taken in the line *y y*, fig. 1.

Figure 4, a plan or top view of the same.

Similar letters of reference indicate corresponding parts.

A represents a furnace, in which the sulphur is burned to generate sulphurous-acid gas, and B B' B'' are pipes, which conduct the gas down to a chamber, C, in which one end of a tubular shaft, D, is fitted and allowed to rotate freely, said shaft being fitted horizontally in a water-chamber, E, and having a hollow wheel, F, upon it, with draught-nozzles *a* attached.

This wheel F is submerged in the water in chamber E, as shown clearly in figs. 2 and 3.

G is a water-supply pipe, which communicates with the pipe B'', and H is a pipe, which regulates the height of water in E.

On the top of chamber E, and communicating with it, there is a small chamber, I, in which a valve or damper, J, is placed, said valve or damper being on a shaft, *b*, which passes horizontally through the chamber I, and is connected at one end, by arms *c c' c'' c'''*, with a segment register, K, at one end of the furnace A, and with a pendent valve, L, in a juice-trough, M, (see more particularly fig. 1,) the shaft *d* of the valve L having a weight or counterpoise, *e*^x, at one end.

The juice-trough M is slightly inclined, and has two sunken recesses *e e*, in which the lower ends of pendent-partition plates N N pass, (see fig. 1.)

Within this juice-trough M there is a wheel, O, formed of a series of curved plates, *f*, attached to an extension, *g*, of shaft D, said extension being solid.

The plates *f* are perforated.

The wheel O is about midway between the partition-plates N N, and the chamber I communicates with the juice-trough by means of a pipe, P, as shown clearly in figs. 1 and 3.

The operation is as follows:

The furnace A is supplied with sulphur, and the latter ignited, and the wheel F rotated by means of a belt or suitable gearing, driven by any proper motor, the wheel O in the juice-trough M being also rotated.

Water is allowed to flow from any suitable reservoir through pipe G into pipe B'', and thence into the tubular shaft, and through the wheel F into chamber B, the pipe H limiting the height of the water in chamber E.

The rotation of wheel F draws the gas from furnace A, through the pipes B B' B'', said gas passing through the water into the upper part B, and thence into chamber I, and through the pipe P into the juice-trough M, where it is incorporated with the cane-juice, the latter flowing through M, and agitated and brought into contact with the gas by the action of wheel O, the juice being thereby thoroughly deoxidized and bleached.

The pendent-partition plates N N, which extend down into the recesses *e e*, below the surface of the cane-juice, prevent the escape of gas from the trough.

The wheel O, besides performing the function of incorporating the gas with the cane-juice, also serves to regulate the combustion of the sulphur in the furnace, and the supply of the sulphur to the trough M.

This is effected by the wheel O throwing the cane-juice against the valve L, which actuates the valve or damper J, and the register K, the latter admitting more or less air into furnace A, to support the combustion of the sulphur therein, and the valve J, by being more or less open, controlling the passage of the gas into trough M.

It will be seen that when no juice or liquid is acted upon by wheel O and thrown against the valve L, there will be no sulphur burned or gas used, and the supply of gas to the juice will always be in proportion to the quantity passing through the trough M. The less depth of juice in M, of course a less quantity will be thrown by the wheel O against the valve L, and said valve will not be acted upon sufficiently to fully open the register K and valve J.

By this apparatus, sugar may be manufactured of a uniform grade throughout, as there will not be at any time an excess or deficiency of gas admitted to the cane-juice.

I claim as new, and desire to secure by Letters Patent—

1. The register K and valve J, in connection with the wheel O and pendent-valve L, all arranged as shown, or in an equivalent way, to admit of the supply of gas to the cane-juice being automatically regulated by the quantity of juice passing through the juice-trough, substantially as set forth.

2. The wheel O in the juice-trough M, in combination with the pendent-partition plates N N and recesses e e, all arranged as shown, for the mixing of the gas with the cane-juice, and the prevention of the escape of gas from the juice-trough, substantially as shown and described.

3. The wheel F, provided with the draught-nozzles α , and submerged in the chamber E, in combination with the pipes B B' B'', and furnace A, all constructed and arranged as shown, for the purpose of drawing the gas from the chamber through the water in E, substantially as set forth.

The above specification of my invention signed by me, this day of , 1867.

EVAN SKELLY.

Witnesses:

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