

(No Model.)

A. WEYER.  
GAS GENERATOR.

No. 377,793.

Patented Feb. 14, 1888.

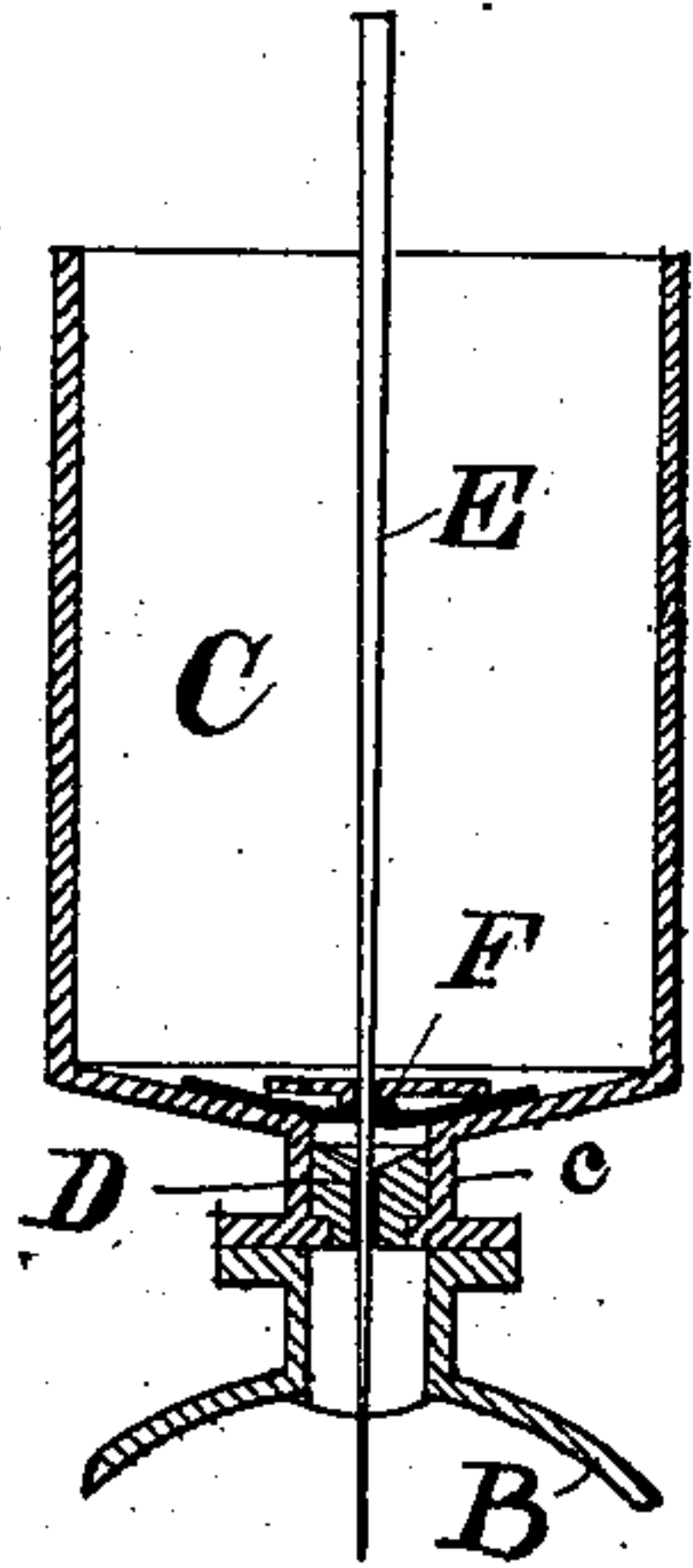


FIG. 2.

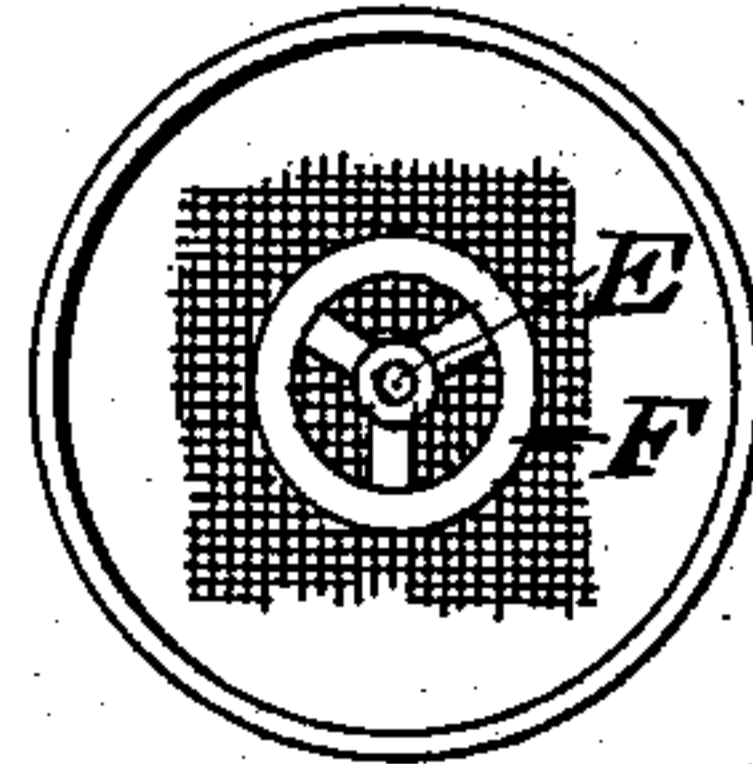


FIG. 3.

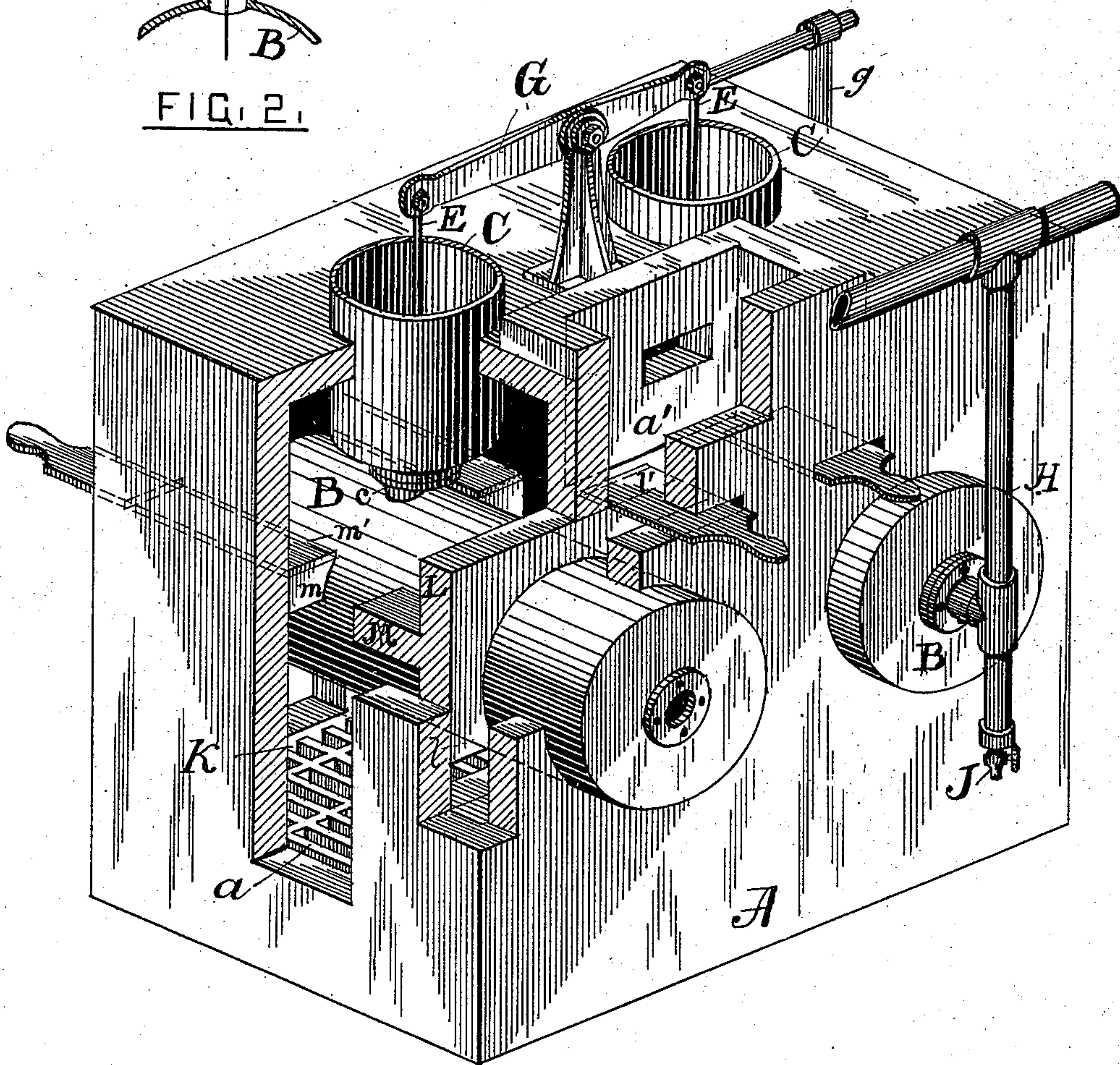


FIG. 1.

WITNESSES:

*A. P. Wood*  
*S. L. Vellyer*

INVENTOR:

*August Weyer*  
By *Albert A. Wood*  
Attorney.



# UNITED STATES PATENT OFFICE.

AUGUST WEYER, OF ATLANTA, GEORGIA.

## GAS-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 377,793, dated February 14, 1888.

Application filed May 20, 1887. Serial No. 238,905. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST WEYER, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented a new and useful Gas-Generator; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to gas-generators, and has especial reference to the class of gas-generators that are used for generating gas from resinous substances. In generators of this class as heretofore constructed it has usually been customary to charge a considerable quantity of resin at one time, necessitating the opening of the generator each time, which renders it impossible to make the operation continuous. The continuous feeding of heated resin through a small aperture has been attempted; but the flow of resin is unreliable, inasmuch as the aperture through which it flows will soon become clogged with foreign substances. It is to obviate these difficulties that I have supplied this device, which consists of a generator and means of heating it, and a resin-tank and means of feeding from it into the generator the necessary amount of resin in a continuous and reliable manner, all of which will be hereinafter fully described, and which are illustrated in the accompanying drawings, of which—

Figure 1 is a perspective view showing the furnace, the generating-cylinders, the resin-tanks, and the levers that actuate the feeding device, one of the pipes by means of which the gas is conducted away, and the plug by means of which the essential oil is drawn off. The arrangement of the flues and dampers by which the heat of the generating-cylinders and the resin-tanks is regulated is also shown in this figure by the breaking away of a pipe and a portion of the furnace-wall. Fig. 2 is a central vertical section through a resin-tank, showing the device by which the resin is fed into the generating-cylinder. Fig. 3 is a plan showing the inside of a resin-tank.

In the figures, like reference-marks indicating corresponding parts in the several views, A is a brick furnace, of which *a* are the grates, and *a'* is the chimney.

B are the generating-cylinders.

C are the resin-tanks, that are connected at the top to the generator B by the pipes *c*, and may be made integrally with the generator, but are preferably made separately and attached as shown in Figs. 1 and 2. The hole D through the pipe *c*, or a portion of it, as shown in Fig. 2, is made somewhat larger than would be required to carry in a steady stream the quantity of resin that would supply the generator. The body of the rod E is large enough to fill up and entirely stop the hole D, but is tapered at its lower end nearly or quite to a point. In Fig. 3 is shown a wire-cloth covering for this hole, and also the part F, having in its center a hole through which the rod passes, and by which it is guided and steadied.

The working-beam G, pivoted at the center and extending over the resin-tanks, is pivoted to the top ends of the rods E. In operating this device this lever is given a vertically-oscillating movement, usually by a pitman, *g*, attached to one extended end of the lever; but the rods F may be given a reciprocating motion, either alternately or at the same time, by any other means without a departure from the spirit of this invention.

The resin-tanks C being supplied with resin and being heated to the point of melting the resin, and the generating-cylinders B being partially filled with coke or other suitable substance and heated to the point of generating the gas, the gas will pass off through the pipes H, and such of its essential oil as may be deposited in these pipes can be drawn by valves J. It is obvious that the reciprocation of the pointed rods F, Fig. 2, will alternately open and close an aperture, which is sufficient, when opened, to allow the melted resin to pass from the tank to the generator, and that by closing will prevent the accumulation of foreign substances in the opening that might otherwise stop it up and prevent or seriously restrict the flow. For this purpose the rod E may be lifted at each stroke, according to the condition of the resinous substance used, entirely



out of the hole, which would cause it in returning to force through the hole and into the generator some of the obstructing substances, or only be lifted sufficiently to leave, by reason of its tapering shape, a sufficient opening around it for the discharge of the required quantity of resin. The wire-cloth shown in Fig. 3 is placed over the greater part of the opening D to obstruct the passage of any substances of a considerable size. The rod F therefore will permit a uniform quantity of resin to flow to the generator at each stroke, the quantity being regulated by the length and frequency of the stroke and the temperature of the resin. The length of the stroke and its frequency may be regulated in any manner, as may also the temperature of the resin; but I prefer to regulate the temperature, as will be hereinafter described.

I have shown and described two of the generators and tanks; but, both sets being alike, all the elements of my invention are contained in each set, so far as the invention relates to them; but I believe it to be preferable to construct them in pairs on account of the greater convenience in operating them.

The construction of one of the furnaces, both being alike, is as follows: Under the generators B and within the walls A is the fire-box K. A chamber is also formed around the bottom part of each resin-tank by the vertical partition-wall L and the horizontal partition-walls M. The wall L has through it the flue *l* from the fire-box, which flue extends around a portion of the length of the generating-cylinder and leads to the chimney *a'*. The damper *l'* is provided for the purpose of closing this flue. Flues *m* pass from the fire-box to the chamber surrounding the resin-tanks, and are provided with the dampers *m'*.

It is important that the heat of the fire-box should be sufficient to generate gas in the cylinders B, and the heat required for that purpose is a uniform quantity; but the quantity for heating the resin-tank varies accordingly as the condition and quantity of the resin. For the purpose of diverting to the heating of the tank such a portion of the heat as may in its passage from the fire-box to the chimney be required for this object, I have devised the

arrangement of the flues and dampers above described, and I will now describe the operation of the heating apparatus as shown and applied to the generators and tanks.

In heating the generators to the degree that will decompose the resin it is preferable to close the dampers *m'* and open the damper *l'*, to open communication from the fire to the chimney without allowing the heat to come in contact with the resin-tanks. The damper *l'*, however, should be closed and the dampers *m'* opened a sufficient length of time before the generation of gas is to be commenced, to allow the resin in the tanks to be liquefied by the heat in passing in their direction to the chimney, after which the dampers should be adjusted to admit exactly the required amount of heat to the chamber around the resin-tanks and the draft required in addition to that be carried through the flue *l* and damper *l'*.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a gas-generating apparatus, the combination of the retorts B and resin-supply tanks C, each tank having an outlet through the opening F and connected to said retorts by the pipes *c*, the needle shaped rods E, attached to an oscillating lever, and means for operating the same, whereby a continuous flow of resin from the tank to the retort is effected, substantially as set forth.

2. In a gas-generating apparatus, the combination, with the retorts B B, provided with the resin-supply tanks C C, placed directly over said retorts, of a furnace consisting of the fire-box, the vertical partition-walls and horizontal partition-walls forming a chamber around the lower part of the resin-tank, said walls having flues *l* and *m*, respectively, and the latter provided with dampers *l'* and *m'*, whereby a uniform heat may be maintained about the retort and supply-tanks, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

AUG. WEYER.

Witnesses:

L. NOIZET,  
A. P. WOOD.