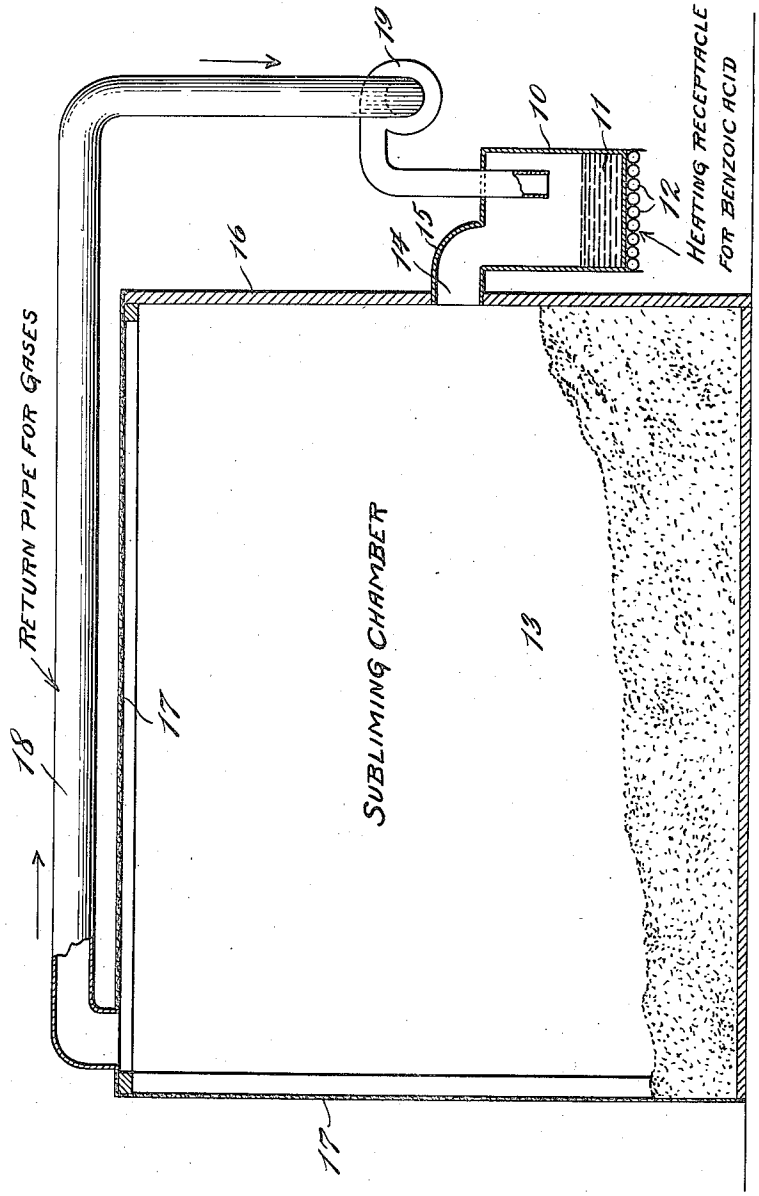
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R. H. McKEE

METHOD OF SUBLIMING BENZOIC ACID

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By Ralph H. McKee Inventor
Gifford & Bull Attorneys

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UNITED STATES PATENT OFFICE.

RALPH H. McKEE, OF NEW YORK, N. Y.

METHOD OF SUBLIMING BENZOIC ACID.

Application filed March 30, 1922. Serial No. 547,617.

To all whom it may concern:

Be it known that I, RALPH H. McKEE, a citizen of the United States, residing at New York, in the county of New York, borough of Manhattan, and State of New York, have invented certain new and useful Improvements in Methods of Subliming Benzoic Acid, of which the following is a specification.

My invention more particularly relates to a method of subliming benzoic acid in accordance with which the material is sublimed at a temperature sufficiently low to prevent substantially charring and decomposition of the material. My invention is particularly applicable to the purification of benzoic acid in which the raw material operated upon is nearly pure.

Other objects of my invention will appear in the specification and will be particularly pointed out in the claim.

In the drawing, I have illustrated an apparatus suitable for carrying out my invention, in which 10 is a subliming kettle or receptacle, in which is received the benzoic acid 11, which is to be sublimed. The receptacle 10 is preferably, though not necessarily, formed of aluminum, as I have found that this material is not attacked by the molten benzoic acid. Suitable heating means, here shown as comprising heating coils 12, are provided for heating the receptacle 10. The receptacle 10 communicates with the subliming chamber 13 through a passage 14 formed by a pipe 15. A portion 16 of the walls may be formed of wood or other suitable material impervious to the atmosphere, while at least a portion 17 of the walls, and here shown as the back wall and roof of the chamber, are preferably formed of a material such as canvas, which is pervious to the atmosphere. The air is withdrawn from the rear end of the chamber 13 by a pipe 18 which leads to the receptacle 10, a suitable fan or blower 19 being provided for creating a circulation of neutral gas, preferably air, over the benzoic acid in the subliming kettle and through the subliming chamber.

By creating a circulatory current of neutral gas over the benzoic acid in the subliming receptacle and through the subliming chamber, I am enabled to carry out the process at a temperature generally about 160° C. and not above 175° C., instead of about 250° C., as in the ordinary process of benzoic acid sublimation. The relatively lower temperature at which my process is carried out substantially eliminates the charring and decomposition of the benzoic acid which takes place in the ordinary process which is carried out at a temperature around 250° C. Furthermore, the provision of the circulatory current of neutral gas increases the speed of the sublimation and permits the process to be carried out in approximately half the time for a given amount of material that is ordinarily required. The lower temperature also reduces, to a large extent, the heat losses which are incident to sublimation at the higher temperatures.

The provision of the canvas walls in the subliming chamber serves to relieve the pressure incident to the expansion of the gases caused by heating the same, and also permits ready cooling of the vapors and possibly some diffusion in of fresh air by the circulating air. This feature is of importance where crude benzoic acid is furnished to the sublimer in a wet state, this replacement serving to rid the vapors of the moisture, whereas if the sublimer chamber was practically air tight, such moisture would be condensed in the finished product which would then be wetter than is commercially desirable.

What I claim and desire to secure by Letters Patent of the United States is:

The process of subliming benzoic acid which consists in heating the benzoic acid in a receptacle to a temperature below that at which it substantially chars and in the presence of a neutral gas, passing the benzoic acid vapors with the neutral gas to the subliming chamber, and returning the neutral gas to the heating chamber at a temperature at least as low as that at which it leaves the sublimation chamber.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

RALPH H. McKEE.

Witnesses:
ROSEVELL DILLAN,
M. GREENBAUM.