Patented Jan. 23, 1934

1,944,301

UNITED STATES PATENT OFFICE

1,944,301

PROCESS FOR PRODUCING BLEACHING POWDER

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No Drawing. Application March 12, 1931, Serial No. 522,163, and in Germany March 14, 1930

6 Claims. (Cl. 23—86)

The present invention relates to improvements in the manufacture of bleaching powder, and is more particularly concerned with an improved method of making bleaching powder in so-called mechanical bleach chambers.

It has been frequently experienced in the manufacture of bleaching powder that the rise in temperature produced by the liberated heat of reaction gives cause to an effect which may be termed a melting of the resulting product in its own water of crystallization. As a result of this melting, the bleaching powder loses its pulverulent condition. The mass, which then has a moist appearance, clogs together and becomes lumpy, and when in this condition offers a comparatively high resistance to the stirring mechanism. On cooling, hard pieces of bleaching powder are obtained.

The mechanical processes hitherto devised for the manufacture of bleaching powder endeavour to overcome these difficulties either by a reduction of the thickness of the layer of lime under treatment or by a correspondingly stronger build of the stirring mechanism, both amounting to a largely increased outlay of apparatus. If on the other hand such precautionary measures are not taken, it is necessary to slow down chlorination, this resulting in a smaller output for a given size of apparatus. Moreover, this prolonged treatment gives rise to a partial decomposition of the bleaching powder, yielding a product which generally contains as much as one percent and more of chlorine in the form of chloride compounds.

An object of the present invention is to obviate the aforementioned difficulties arising in the manufacture of bleaching powder in mechanical bleach chambers. According to the present invention this object is attained by adding to the hydrate of lime, before or while causing it to react with chlorine, a liquid which is volatilizable, inert to chlorine and hypochlorite, and does not react with nor dissolve bleaching powder. A suitable liquid of this kind is, for example, carbontetrachloride. In contradistinction to known processes involving the preparation of bleaching powder from hydrate of lime in the presence of an inert diluting medium, it is a particular feature of the present invention that the amount of liquid applied in the process is so small, that the pulverulent condition of the hydrate of lime to be chlorinated is left unaltered during the whole chlorination. The amount of liquid thus required amounts to between about 3–7 percent by weight of the hydrate of lime.

When making bleaching powder according to the present invention, it is advantageous to effect chlorination in a closed chamber which is provided with an external cooling device. The inert medium volatilized by the heat of reaction is continually condensed on the cooled walls of the chamber and thus reintroduced into the reaction mixture. It is, however, equally possible to carry out the process in a reaction chamber from which the effluent gases are led to a special condensing device outside the chamber, and to continually return such quantities of the condensed inert medium to the reaction mass as are required to maintain the pulverulent condition of the latter during chlorination.

The advantages resulting from the presence of the inert liquid medium are apparently due to the fact that the reaction heat is largely consumed in volatilizing the inert liquid, and that a melting of the bleaching powder in its water of crystallization is therefore prevented. Chlorination is thus not disturbed by lumping and clogging of the bleaching powder during agitation by the mechanical members of the apparatus, and therefore proceeds smoothly. The employment of only small quantities of an inert medium offers the further advantage that subsequent separation of the finished bleaching powder from such medium, be it by the application of a vacuum or by treatment with heated air, only requires a comparatively short time and a small consumption in energy. Coincidentally with chlorination and subsequent volatilization of the inert medium, the bleaching powder is partially dehydrated.

Example

To 1000 parts by weight of hydrate of lime, 64 parts by weight of CCl_4 are added in a mechanical bleach chamber provided with an internal stirring and an external cooling device and are subjected to chlorination in the known manner while thoroughly stirring. When chlorination is completed, the CCl_4 is driven off in a vacuum at about 30–40° C., this treatment yielding 600 parts by weight of a bleaching powder containing 37 percent of available chlorine and only about 0.2 percent of chlorine in the form of chlorides. The water content of the product amounts to about 50 percent of that contained in bleaching powder produced by the processes hitherto employed, i. e. without addition of CCl_4.

I claim:—

1. A process for producing bleaching powder in mechanical bleach chambers which comprises subjecting to chlorination a mixture substantially consisting of hydrate of lime with a liquid which is easily volatilizable and inert towards chlorine,

towards hydrate of lime, and towards bleaching powder, said inert liquid being present in such quantities that the pulverulent state of the mixture under conditions or chlorination is maintained.

2. A process for producing bleaching powder in mechanical bleach chambers which comprises subjecting to chlorination a mixture substantially consisting of hydrate of lime with between about 3 and 7 percent by weight of carbon-tetrachloride so as to maintain the pulverulent state of the mixture under the conditions of chlorination.

3. A process for producing bleaching powder in mechanical bleach chambers which comprises subjecting to chlorination in a closed vessel a mixture substantially consisting of hydrate of lime with a liquid which is easily volatilizable and inert towards chlorine, towards hydrate of lime, and towards bleaching powder, said inert liquid being present in such quantities that the pulverulent state of the mixture under conditions of chlorination is maintained and cooling the walls of said vessel from without to a temperature sufficient to condense the inert liquid volatilized by the heat of reaction.

4. A process for producing bleaching powder in mechanical bleach chambers which comprises subjecting to chlorination in a closed vessel a mixture substantially consisting of hydrate of lime with carbon-tetrachloride, the latter being present in such quantities that the pulverulent state of the mixture under conditions of chlorination is maintained, and cooling the walls of said vessel from without to a temperature sufficient to condense the carbon-tetrachloride volatilized by the heat of reaction.

5. A process for producing bleaching powder in mechanical bleach chambers which comprises subjecting to chlorination a mixture substantially consisting of hydrate of lime with a liquid which is easily volatilizable and inert towards chlorine, towards hydrate of lime, and towards bleaching powder, said inert liquid being present in such quantities that the pulverulent state of the mixture under conditions of chlorination is maintained, and after chlorination is completed removing said inert liquid by applying a vacuum at about 30–40° C.

6. A process for producing bleaching powder in mechanical bleach chambers which comprises subjecting to chlorination a mixture of hydrate of lime with between about 3 and 7 percent by weight of carbon-tetrachloride so as to maintain the pulverulent condition of the mixture under the conditions of chlorination, subjecting said mixture to chlorination, and after chlorination is completed removing the carbon-tetrachloride by applying a vacuum at about 30–40° C.

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