

IN THE UNITED STATES PATENT OFFICE

In re application of :
GUNNARD E. JOHNSON, :
REGINALD G. BOWMAN and :
WILLIAM J. KNOX, JR. :
Serial No. 178,352 : METHOD OF PRODUCING
WHITE LEAD
Filed December 6, 1937 :
Div. 56 - Room 4725 :

AFFIDAVIT

STATE OF INDIANA)
: ss:
COUNTY OF LAKE)

William J. Knox, Jr., being duly sworn deposes
and says:

I am one of the applicants in the above-mentioned
application.

I am employed by the International Smelting and
Refining Company, and I am thoroughly familiar with the
White Lead Plant of that Company at East Chicago, Indiana,
where white lead is produced electrolytically. I am and
have been for the past 15 years Superintendent in charge of
this White Lead Plant.

I am one of the patentees of the Patent to Johnson
et al No. 1,845,713. I am thoroughly familiar with the
process therein described and with the work leading to the
development of that process.

The Johnson et al patent recognizes the importance
of controlling the bicarbonate ion concentration of the
anolyte in electrolytic processes for the manufacture of

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white lead, and mentions several methods for effecting such control. One such method is to maintain the supply of CO_2 to the catholyte constant and to add acetic acid to the anolyte at the point outside the cell (this is procedure (2) of the Johnson et al patent, page 1, lines 39-42). Another such method is to maintain the supply of CO_2 to the catholyte constant and to supply sodium bicarbonate as such to the anolyte at a point outside the cell (this is procedure (4) of the Johnson et al patent, page 1, lines 47-50).

Prior to making the invention disclosed and claimed in the present application Serial No. 178,352, filed December 6, 1937, the only commercially feasible method for controlling bicarbonate ion concentration in the anolyte known to me was the method referred to in procedure (1) of the aforesaid Johnson et al patent No. 1,845,713 (page 1, lines 37-39).

The above-mentioned methods of control (procedures (2) and (4) of the Johnson et al patent) were never carried beyond the preliminary development stage because, while these methods of control are effective to control the bicarbonate ion concentration of the anolyte and hence the composition of the white lead product, neither of these methods is commercially feasible. With these above-mentioned methods of control the acetate ions in the case of procedure (2) and sodium ions in the case of procedure (4) must be added in substantial excess of the normal operating loss of these substances in order to secure effective control of the bicarbonate ion concentration in the anolyte. Consequently, the concentration of these added ions increases to such an extent that it becomes necessary continuously to discard a

portion of the electrolyte to which they were added in order to permit lowering the concentration of these ions in the remaining electrolyte by dilution with water. Discarding a portion of the electrolyte is required in order to permit dilution of the remaining electrolyte, because without discarding such portion, the volume of the electrolyte is increased by dilution to beyond the capacity of the plant equipment. The cost of the reagents present in the electrolyte thus required to be discarded is so great that the methods of control requiring such discarding of electrolyte (procedures (2) and (4) of the aforesaid Johnson et al patent) can not be employed in commercial operations.

In addition to myself, the patentees of the aforesaid Johnson et al patent No. 1,845,713 are Gunnard E. Johnson and Reginald G. Bowman, the same Gunnard E. Johnson and Reginald G. Bowman who are co-applicants with me in the matter of the present application. The said Gunnard E. Johnson and the said Reginald G. Bowman are and have been continuously employed in the aforesaid East Chicago Plant of the International Smelting and Refining Company since prior to the development of the process described in the aforesaid Johnson et al patent, and the nature of their employment has been continuously, during that time, such that they have each been at all times familiar with details of operation of the White Lead Plant. From the time of the development of the process described in the said Johnson et al patent No. 1,845,713 until development of the process described and claimed in the present application, I discussed the operations and conduct of the White Lead Plant with each of these men almost daily. At no time prior to the

development of the invention described and claimed in the present application did either of these men suggest to me the possibility of controlling the bicarbonate ion concentration of the anolyte in the manner described in the present application. Had this method of control been known or apparent to either Gunnard E. Johnson or Reginald G. Bowman, the duties of their employment would have required them promptly to acquaint me therewith.

s/ William J. Knox, Jr.
William J. Knox, Jr.

Subscribed and sworn to before me this 26th day
of December, 1940.

(Seal)

s/ Lester A. Milne
Notary Public
Comm. Exp. 8/3/44