PROCESS OF BINDING AND UTILIZING ATMOSPHERIC NITROGEN.

U. S. Patent No. 1,031,477, to Alf Sinding-Larsen, Assignor to Messrs. Storm, Bull & Co., of Christiania, Norway.

In the practice of this process to produce silicon-nitrogen compounds of varying nitrogen content, a mixture of coke and quartz is heated to a white heat in a blast furnace. Somewhat above the bottom of this furnace, a mixture of nitrogen and chlorine is first introduced. Tetrachloride of silicon is formed which then reacts with the excess of quartz and coke to form silicon trichloride. At the high temperature present this trichloride will be acted upon by the nitrogen, so that silicon-nitrogen compounds are formed, then silicon tetrachloride is again formed, and so on. A part of the volatile silicon chlorine compounds is liable to escape, together with the carbon mon-

tionary mass of catalytic material 7 while contacting with the counter-current of hydrogen. The heating jackets may be filled with paraffin wax or a fusible alloy maintained at the requisite temperature. The treated oil discharges at the lower end of the conduit through the pipe 20, and the spent or excess gas is removed by the pipe 22. When using a nickel catalyzer

oxide which is formed, and which has to be removed. In order to keep these back, the current of carbon monoxide is conducted through a suitable cooler, where the volatile compounds will be condensed and thereupon led back to the furnace.

HYDROGENATING FATTY MATERIALS.

U. S. Patent No. 1,026,156 to Carleton Ellis, Assignor to New Jersey Testing Laboratories, of Montclair, New Jersey.

This is a continuous process of treating unsaturated fats and the like by means of hydrogen or hydrogen adding substances for the purpose of saturating, to a greater or less extent, such unsaturated bodies, in order to raise their melting point or otherwise improve their quality.

The addition of hydrogen to unsaturated organic compounds as brought about by the catalytic agents has been the subject of many investigations, which embrace the work of Sabatier and Senderens, Mailhe, Henle, Willstatter and Mayer, Paal and Amberger, Paal and Gerum, Paal and Roth, Paal and Hartmann, Ipatiew and Philipow, Jakowlew, Rakitin and others.

In the practice of this process unsaturated fat is placed in the tank 1 and is allowed to flow slowly into the conduit 6 or 6a, respectively. Hydrogen gas or water gas is admitted through the pipe 18 as a counter-current, the hydrogen traveling in a direction contrary to the traveling liquid stream of oil. The conduit is inclined from the horizontal to secure any desired rate of travel of the oil stream. The latter flows past the sta-

and differentially heating the conduit, the temperature in 6a may, for example, be 150° C.; in 6b, 165° C.; and in 6c, 180° C., when converting oleic acid or olein into stearic acid or stearin, respectively.

METHOD OF TREATING CARBON.

U. S. Patent No. 1,032,246, to William Acheson Smith, Assignor to International Acheson Graphite Company, of Niagara Falls, New York.

This is a process of treating carbon or carbonaceous material for the purpose of converting it in a progressive or substantially continuous manner into a homogeneous, uniform, commercial product. As between the several forms of carbon which may result from the application of heat to commercial carbonaceous materials, no mechanical separation is practicable, and it is essential in order that a given raw material may be converted throughout its mass into a commercial product of the desired density and electrical conductivity that the conditions as regards time and temperature of heating should be susceptible of accurate control and close adjustment, and that the heat should be so applied as to result in a practically uniform treatment of all particles traversing the furnace. According to this invention, the body of carbon or carbonaceous material to be treated is moved progressively through a heating zone located between terminals connected to a source of polyphase current, the arrangement of the terminals and the construction of the furnace being such as to secure a practically

uniform heating of the entire cross section of the charge. One or more heating zones may be provided according to the results desired.

UTILIZING ACID SLUDGE FROM REFINING PETROLEUM.

U. S. Patent No. 1,031,413, to John C. Black and Marvin L. Chappell, of Richmond, California, Assignors to Standard Oil Company, of Richmond, California.

This is a process for utilizing the sulphur content of acid sludge for the production of sulphuric anhydride. The sludge is first heated in the presence of a solvent of hydrocarbons to effect a partial decomposition of the sludge. The solvent with the

hydrocarbons in solution is then withdrawn and the residual sludge subjected to a decomposing temperature (not above 425° F.). The aeriform products from both decompositions

are purified by contact with a solvent of hydrocarbons, the resulting aeriform products being passed over catalytic material for converting their sulphur dioxide content into sulphuric anhydride.

PRODUCTION OF LEAD COMPOUNDS.

U. S. Patent No. 1,033,405, to Louis S. Hughes, of Chicago, Illinois, Assignor to Picher Lead Company, of Joplin Missouri.

A process of producing lead compounds such as lead hydrate, litharge, minium, lead carbonate, arsenate, nitrate, chromate and similar lead salts from lead sulphate. Lead sulphate is converted into lead hydroxide which in some cases is the ultimate product of the process and in other cases is an intermediate product thereafter converted into other compounds. In practice lead sulphate and an alkaline base are placed in a grinding mill, a small quantity of water is added to the mixture, and the mass is thoroughly triturated. By triturating the wet mixture of lead sulphate and the alkaline base a thorough and rapid conversion of the lead sulphate is obtained. The trituration is effected in a double cone ball mill of well-known type, employing pebbles or metal balls. Crusts or coatings of lead hydrate are successively formed on and rubbed off

of each kernel of the lead sulphate until finally the entire kernel is converted. After the conversion is completed the mixture of lead hydroxide and sulphate of the alkaline base is run out of the mill and the lead hydrate separated.

REFRACTORY ARTICLE AND METHOD OF MAKING IT.

U. S. Patent No. 1,030,999, to Samuel F. Hall, of Niagara Falls, New York, Assignor to Norton Company, of Worcester, Mass.

Attempts have been made to cast molten alumina or other refractory oxides or combinations of these in molds, but such efforts have not proved wholly successful. According to the patentee's process articles consisting of such refractory oxides are produced by heating the oxide, for example alumina, to a state of quiet fusion in an electric furnace, then dipping or immersing in the fused mass a mold or form, usually of carbon or graphite, withdrawing the mold together with the adhering or contained oxide, and separating or detaching the solidified oxide from the mold. By proceeding in this manner the patentee has found it practicable to produce a variety of articles, such as rods, tubes, vessels or the like, without flaws, cracks or objectionable irregularities, and, in the case of tubes or hollow articles, with any desired thickness of wall.

PROCESS OF MANUFACTURING ALUMINIUM NITRIDE.

U. S. Patent No. 1,030,929, to Ottokar Serpek, Assignor to Société Generale Des Nitrures, of Paris, France.

It is well known that if alumina be heated to a high temperature, for example in the neighborhood of 1800° C., in the presence of carbon and nitrogen it will combine with nitrogen to form aluminium nitride.

Heretofore it has been customary to pass an electric current through a mass of comminuted and intimately mixed carbon and alumina in an electric arc furnace through which nitrogenous gas is simultaneously blown. This is in a measure unsatisfactory, the heat being too high in certain zones and too low in others. The patentee has discovered that this disadvan-

tage may be overcome if the mass is heated by being brought into contact with resistance elements through which alone the current passes. The resistance elements are preferably composed of a mixture of carbon and aluminium nitride and these, during the reaction, are set in motion so as to form stirrers which agitate the finely divided mixture of carbon and alumina and thus not only serve to evenly heat the mixture but to subject it more thoroughly to the action of the nitrogen which is blown through the reaction chamber.