RECENT INVENTIONS

Reported by C. L. Parker, Solicitor of Chemical Patents, McGill Building, Washington, D. C.

METHOD OF PRODUCING NITROGEN COMPOUNDS.

U. S. Patent No. 1,018,802, to Charles E. Acker, of Ossining, New York, Assignor to the Nitrogen Company of New York.

The patentee has discovered that a direct current of electricity from an alkali-metal alloy, *e. g.*, sodium-lead alloy, through molten alkali cyanid to a carbon cathode liberates the alkali

metal in the pure state at the cathode; but if ammonia, hydrocarbon amines or their decomposition products, singly or mixed, or other suitable nitrogenous reagent be brought into contact with the surface of this cathode, while the current is passing, such reagent will instantly combine with the liberated alkali metal and carbon of the cathode, to form more alkali cyanid which immediately mixes with the mass of molten cyanid already present.

The hydrogen-carbon-nitrogen compound must have carbonaceous and nitrogenous constituents capable of combining to form a radical comprising carbon and nitrogen when the compound is reacted upon by the nascent metal.

METHOD OF MAKING ANHYDROUS TIN CHLORID.

U. S. Patent No. 1,018,805, to Gervais Baillio, of Niagara Falls, New York, Assignor to Castner Electrolytic Alkali Company.

A continuous process for converting metallic tin into anhydrous tin bichlorid on a commercial scale.

In manufacturing anhydrous tin bichlorid in the dry way, *i. e.*, by passing dry chlorin gas over metallic tin, sufficient heat is developed to melt the tin, and part of the tin forms stannic oxid, causing a loss of tin.

The patentee avoids any oxidation of the tin by submerging it in a quantity of anhydrous

liquid, so that the tin is completely covered; chlorin gas is then applied. This operation must be carried out in a water-jacketed vessel fitted with steam connections, as temperature control is necessary. While the tin used may be perfectly pure, it is not necessarily so, as very satisfactory results have been obtained from a compound containing about 90 per cent. tin, the remaining 10 per cent. being composed of lead, iron and other impurities.

Carbon tetrachlorid or any suitable anhydrous liquid may be employed as the substance in which the tin is submerged, but the patentee recommends the use of anhydrous tin bichlorid for this purpose. When the chlorin is admitted to the tin bichlorid, or other anhydrous liquid, it attacks the tin contained therein and forms additional tin bichlorid. The latter is perfectly free from moisture (notwithstanding the fact that moist chlorin gas may be used) and may be drawn off from time to time, without interfering with the continuity of the process.

THE MANUFACTURE OF SODIUM CYANIDE.

U. S. Patent No. 1,019,002, to Chas. E. Acker, of Ossining, New York.

This process consists in passing a current of electricity through an electrolyte of sodium and barium chlorides, using molten lead for the cathode; circulating the resulting alloy of sodium, barium and lead through the apparatus by means of a centrifugal pump; introducing a large amount of finely-divided charcoal in a reaction chamber, then lowering a plunger until slightly submerged; introducing at this stage fuel oil under pressure through this plunger and nitrogen through another pipe. The fuel oil is decomposed into hydrogen, which escapes, and carbon, which, with some of the carbon of the charcoal, forms barium carbide; the nitrogen combines with the barium carbide to form barium cyanide. The latter compound is then decomposed by the sodium, regenerating the barium and forming sodium cyanide which rises to the top of the bath, and can be drawn off.

INDUCTION FURNACE.

U. S. Patent No. 1,020,688, to Richard Fleming, of Lynn, Massachusetts, Assignor to General Electric Company.

This invention relates to electric furnaces of the induction type, in which the mass of metallic ore to be fused forms the closed secondary circuit of a transformer, the primary circuit

consisting of a suitable coiled conductor in inductive relation to a magnetic core common to both circuits.

Heretofore it has been customary to incorporate the primary winding in the structure of the furnace, concentric with the core which passes also centrally through the cir-

cular crucible in which the ore to be smelted is placed.

As all parts are stationary, the apparatus calls for additional devices for regulating the current and adjusting it to the load; because with different quantities or qualities of ore, different quantities of current must be used.

The object of this invention is to render the furnace self-regulating so that it will automatically adjust itself to any variation in load. This is accomplished by making the primary coil separate from the furnace as shown; and mounting it adjacent thereto in such a manner that it can move under the mutual repulsion which exists between it and the secondary circuit. A counterweight 12 tends to force the movable coil toward the crucible in order that the repulsion may be opposed until the current exceeds the desired strength.

ART OF CONCENTRATION OF MINERAL SUBSTANCES.

U. S. Patent No. 1,022,085, to James M. Hyde, of Basin, Mont.

This is a process of separating by flotation the valuable part of the mineral substance of ore pulps from the valueless or less valuable gangue minerals, by first preferentially coating the valuable part by means of a fat or oil whereby it exhibits markedly different surface tension phenomena from the remainder of the ore. The mixture is then agitated, permitting the valuable parts of the ore to float in the form of a froth which is separated from the balance of the ore by overflowing it together with