229,338.—*Process and apparatus for producing hydrogen gas.* CYPRIEN MARIE TESSIÉ DU MOTAY.

The process consists, according to the claims, in first highly heating vapor of naphtha and steam ; second, bringing the naphtha vapor and steam into contact with a highly heated body of lime ; third, passing the gaseous products through a cooler body of lime, whereby carbonic acid is absorbed and separated from the hydrogen ; fourth, revivifying the lime when charged with carbonic acid, by burning in its presence a sufficient supply of gas containing hydrogen, and fifth, continuing the operation with the revivified lime.

229,339.—*Process and apparatus for manufacturing hydrogen gas;* and :

229,340.—*Process for the production of hydrogen gas*—by the same inventor—show essentially the same process applied to water-gas and ordinary coal-gas respectively, instead of naphtha.

229,374.—*Apparatus for purifying air.* FRIEDRICK A. BRUNS.

229,473.—*Paint composition.* GENNARO ROSSI.

Consists of refined petroleum, boiled linseed oil, bees wax, sugar of lead, garlic-juice, milk of sulphur, cayenne-pepper and tallow.

Foreign Patents

Condensed from R. BIEDERMANN's Report to the German Chemical Society,

by OTTO H. KRAUSE.

GEO. BORSCHE, Leopoldshall : *Apparatus for the continuous preparation of bromine.* (Germ. P., No. 9553, July 18, 1879.)—The apparatus is a vessel made of sand-stone or other resisting material, containing coke or fragments of earthen ware, &c., through which the solution containing bromine trickles, and meets a current of steam and chlorine gas, which enters near the bottom of the vessel. See also this JOURNAL, 1, 502.

L. THIERCELIN, Paris : *Method of obtaining iodine, etc., from marine plants.* (Engl. P., No. 2539, June 25, 1879.)—The plants are finely cut up and mashed, and brought to fermentation with the aid of yeast. The alcohol is distilled off, the residue evaporated and calcined at a low temperature. From this iodine, bromine and potassium salts are obtained in known manner.

A. NOBEL, Paris : *Refining cast iron.* (Engl. P., No. 2314, June 11, 1879.) Highly heated hydrogen gas is forced through the molten metal to remove sulphur and phosphorus. Subsequently, superheated steam is passed through, the oxygen of which is supposed to act on the carbon of the cast iron only.

C. DE MONTBLANC and L. GAULARD, Paris : *Removal of metalloids from iron ores and cast iron.* (Engl. P., No. 2383, June 16, 1879.)—These inventors also inject superheated steam into the molten metal. The hydrogen of the decomposed steam is supposed to remove sulphur and phosphorus.

ALFRED NOBEL, Paris: *Explosive compound.* (Engl. P., No. 2399, June 17, 1879.)—The inventor proposes to overcome the difficulty of exploding finely

divided and strongly compressed gunpowder, by placing 3–10 grms of dynamite into the interior of each blasting charge, and by employing a suitable priming composition. For the latter purpose he prefers picrates. 40 parts of bibasic barium picrate, or tribasic lead picrate, are moistened with 3 parts water, and mixed with 60 parts gunpowder, in the form of flour. This mass is made into a cylinder weighing about 6 grms, and set into a cavity left in the charge of compressed gunpowder.

H. F. Howell, Sarnia, Ontario, Canada: *Purification of crude petroleum.* (Engl. P., No. 2410, June 18, 1879.)—The petroleum is treated with chlorine. It seems from the somewhat obscure specification, that the inventor not only proposes to remove impurities, such as sulphur and phosphorus, but also to produce substitutions in the hydrocarbons.

J. Cazet, J. Lafaure, C. Jossier and A. Mathey, Paris: *Method of thickening petroleum and other mineral oils, as well as syrup, by means of lichenin.* (Germ. P., No. 9984, Nov. 7, 1879.)—Japanese moss, or other moss containing lichenin in addition to pectine substances, is extracted with hot water, and the solution intimately mixed with the petroleum. The mass becomes thick or hard, and is rendered easily transportable. By adding alkali and filtering, or by pressing, the petroleum is reobtained in the fluid condition.

John T. King, Liverpool: *Artificial fuel.* (Engl. P., No. 2521, June 24, 1879.)—Peat, mixed with coal-tar, pitch, asphaltum, lime-stone, salt and borax in different proportions to suit the purpose for which it is intended.

H. Trotman, London: *Gun-cotton.* (Engl. P., No. 2536, June 24, 1879.)—To reduce the degree of explosibility of gun-cotton, it is mixed with "silicate cotton."

E. Farrington, Paris: *Treatment of asphaltum for paving.* (Engl. P., No. 2560, June 26, 1879.)—Instead of softening the asphaltum by means of heat, it is partially dissolved by impregnating the pulverized substance with bisulphide of carbon, naphtha, benzine, etc.

Ludwig Heyer, Berlin: *Method of recovering caoutchouc from vulcanized rubber waste.* (Germ. P., No. 9910, Sept., 1879.)—The waste is placed in a vessel having three compartments. The steam from the water boiling in the lowest of these, acts upon the rubber contained in the middle one, whilst a higher heat is supplied by a fire in the upper compartment. The sulphur distills off, and the caoutchouc melts and runs into the lowest chamber, the mineral substances being retained upon sieves.

A. Zwillinger, Vienna: *Improvements in apparatus for making glue.* (Germ. P., No. 9618, April 19, 1879.)—The apparatus for producing the jelly is composed of two steaming vessels, a steam cylinder and an air compressor. It is so arranged that at no stage of the process can steam and jelly come directly in contact. Compressed air is forced through the bone mass covered with hot water. Yield and quality of the glue are said to be improved thereby.

Sidney G. Thomas: *Phosphates.* (Engl. P., No. 2414, June 18, 1879.)—The slag resulting from Thomas' method of dephosphorizing iron, is finely divided and dissolved in hydrochloric acid. The filtered solution is evaporated, the residue calcined at a temperature sufficient to drive off excess of hydrochloric

acid, without decomposing ferric and manganic chlorides. Water dissolves out calcic, ferric and manganic chlorides, leaving a concentrated basic phosphate.

T. F. WILKINS, London: *Preservation of food.* (Engl. P., No. 2512, June 23, 1879.)—The following chemicals are recommended—chiefly for butter: salicin, methylal, chloral, lactic acid, salicylic acid, metaphosphoric acid, sodium, metaphosphate, borax and sodium formiate.

T. H. GRAY, Clapham: *Manufacture of varnish.* (Engl. P., No. 2518, June 23, 1879.)—Description of an apparatus in which linseed oil can be exposed to the action of a current of heated air.

R. GOTTHEIL, Berlin: *Method of preparing eupittonic acid from wood-tar.* (Germ. P., No. 9328, Oct. 12, 1878.) (See A. W. Hofmann's researches on this coloring matter, Ber. d. d. chem. Gesell., **12**, 1371.)—The part of wood-tar oil which is heavier than water is, after repeated distillations, heated with about 25 per cent. of alkali, the indifferent oils are separated, and the hot alkaline solution mixed with 25 per cent. of sodium chloride. After cooling, the dimethyl ethers of pyrogallic and methylpyrogallic acids separate as a crystalline mass. This is mixed up with about five times its volume of a 20 per cent. solution of sodium hydrate. After heating to boiling, a current of air is passed through the liquid until it becomes perfectly blue. The aqueous solution of potassium eupittonate thereby formed is filtered off hot, and the acid precipitated by addition of hydrochloric acid. The acid is purified by repeatedly recrystallizing its sodium salt.

H. KNOBEL, Leipzig: *Apparatus for continuous extraction.* (Germ. P., No. 9700, Aug. 13, 1879.)—The extracting liquid passes by distillation into the extracting vessels, and from these runs back into the distilling apparatus. The latter is connected with evaporating pans so that the operations of extracting and concentrating go on uninterruptedly.

H. ROHRBECK, Berlin: *Steam drying oven.* (Germ. P., No. 9841, Nov. 4, 1879.)—A drying oven with double walls, between which steam is admitted. Before reaching the drying chamber, the air passes over calcium chloride and through a coil of pipe surrounded by steam and lying on the bottom of the oven. A safety valve and a thermometer are fixed to the apparatus.

W. E. A. HARTMANN, Swansea: *Manufacture of sulphuric acid.* (Engl. P No. 2839, July 11. 1879.)—The final concentration of the pan acid is carried on in iron instead of platinum vessels. To render this possible, a strong solution of sulphate of iron is added to the acid before it enters the iron pan. Upon further evaporation, the iron salt separates so that only traces of it remain in the acid ultimately drawn off. The iron pan is surmounted by a leaden dome, from which the acid vapors are withdrawn by means of a fan. From the iron pans the concentrated acid flows into a series of leaden vessels, the last one of which contains a leaden cooling worm. In these vessels the sulphate of iron separates almost completely.

FERD. KOPFER, Mannheim: *Method of, and apparatus for, manufacturing chloride of lime.* (Germ. P., No. 9398, Nov. 7, 1879.)—The hydrate of lime is scattered into the chlorine chamber, with the aid of a centrifugal machine fed continuously at the top by a suitably arranged hopper.

FRED. H. MART, Widnes: *Cover for packages containing caustic soda.* (Engl. P., No. 2212, June 4, 1879.)—Relates to the manner of attaching and detaching the inner projections of the cover described in Engl. Pat., 5052; see this JOURNAL, **2**, 70.

H. P. LORENZEN, Friedrichstadt: *Apparatus for, and method of, obtaining ammonia by carbonization of bones.* (Germ. P., No. 9989, Nov. 21, 1879.)—The bones, chiefly for the manufacture of bone-black for sugar refineries, are carbonized in the usual furnaces and pots. The smoke given off at starting is led directly to the chimney, but as soon as gases are evolved, the damper is closed, and the gases passed over lime heated to redness in a reverberatory furnace. Thereby the nitrogenous matters in the vapors are decomposed into ammonia, whilst tar and gases are burned. Thence the gases pass to an iron vessel in which a considerable portion of ammonium carbonate deposits; this vessel is connected with coke towers, through which sulphuric acid trickles and condenses the rest of the ammonia.

HENRY GUTTON, Nancy: *Evaporation of brine.* (Engl. P., No. 2780, July 8, 1879.)—A vertical series of closed vessels containing scrapers, is so arranged that direct fire is applied to the lower one only, the vessels above being heated by the steam given off from the ones below them. Above them all is an open pan.

JOHN B. SPENCE, London: *Compounds of metallic sulphides and sulphur, and separation of metallic sulphides.* (Engl. P., No. 2706, July 3, 1879.)—Iron and copper pyrites in a condition of finest powder, are mixed with from 10 to 40 per cent. of molten sulphur. The cold mass possesses remarkable hardness and metallic lustre, and is of varied applicability.

A. P. G. DAUMESNIL, Paris: *Method of applying a protective coating to metals.* (Germ. P., No. 10059, Oct. 18, 1879.)—The metal is coated with a mixture of platino-chloride of ammonium and borate of lead, and then strongly heated.

RUSSEL AITKIN, London: *Extraction of gases from molten metals.* (Engl. P., No. 2227, June 5, 1879.)—The vessel (mould, crucible, converter) containing the fused metal is connected with an air pump, to remove occluded gases.

JOHN PATTINSON, Newcastle on Tyne: *Manufacture of soluble phosphates.* (Engl. P., No. 2204, June 3, 1879.)—The phosphorus contained in pig iron is to be converted into an alkaline phosphate, by adding an alkaline hydrate, carbonate, sulphate, chloride, fluoride, nitrate or sulphide, to the iron contained in a Bessemer converter having a basic lining.

SAM. HALLSWORTH, Armley: *Purification (?) of illuminating gas.* (Engl. P., No. 2710, July 3, 1879.)—Claims a patent upon mixing pyrites residues with sawdust, moistening the whole with ammonia water, keeping it stored for some time, and then using it for the above purpose.

C. KOMOREK, Oberhausen: *Manufacture of zinc white in a Bessemer converter.* (Germ. P., No. 10079, Jan. 6, 1880.)—Metallic zinc, heated to near its boiling point, is run into a converter kept at a white heat. Zinc white forms upon blowing, and passes through the neck of the converter into a settling chamber. To sustain the high temperature, coal-dust and substances giving off oxygen are to be mixed with the blast air. The bottom of the converter is charged with small coke, when it is desired to make zinc white direct from the ore.

M. E. SAVIGNY and A. C. COLLINEAU, Paris: *Vegetable coloring matter.* (Engl. P., No. 2281, June 9, 1879.)—By extracting alder and birch wood with alkaline lye, and precipitating with an acid, a dark brown substance soluble in water is obtained. The inventors call the coloring matter alnëine.

BINDSCHEDLER and BUSCH, Basel: *Green coloring matter.* (Germ. P., No. 10410, June 10, 1879.)—Tetramethyldiamidotriphenylmethane, obtained from oil of bitter almonds and dimethylaniline, is converted into the sulphonic acid, and the latter oxidized in an acetic acid solution by means of peroxide of lead or manganese.

VICTOR DUCANCEL, Rheims: *Mordant for dyeing on wool.* (Engl. P., No. 2219, June 4, 1879.)—4 parts cupric sulphate, 4 parts ferrous sulphate, 2 parts sulphuric acid at 66°, 3 parts cream of tartar, 1 part alumina, 1 part sodium sulphate, 1 part potassium chromate and 3 parts oxalic acid.

P. MARCELLIN, Dieulefit: *Blue dye for wool.* (Engl. P., No. 2225, June 4, 1879.)—For a deep blue the following materials are used: 10–12 parts extract of logwood, 1½ parts extract of fustic, 12–14 parts sulphate of iron, 10 parts sulphate of soda, 3 parts sulphate of copper, 3 parts bichromate of potash, 24 parts gallnuts and 5 parts aniline blue.

FRANZ DIETRICH, Munich: *Method of working up the mother liquors resulting in the manufacture of tartaric acid.* (Germ. P., No. 10111, Aug. 10, 1879.)—These liquors are said to contain 400–500 grammes tartaric acid per liter. Only 90 per cent. of the free sulphuric acid present is neutralized with lime or chalk, the rest being necessary to retain iron and alumina in solution. To the filtered liquor a solution of neutral potassium tartrate is added, whereby cream of tartar (at 96–99 per cent.) is precipitated; it is filtered off and decomposed with lime in the usual manner.

GUSTAVE VIBRANS, Uefingen: *Clarification of beet juice by means of hydrated silicic acid.* (Germ. P., No. 9664, July 2, 1879.)—The warmed juice is mixed with ½ to 2 liters hydrated silicic acid, at 10° Bé, per 100 liters. Precipitation is then produced by adding lime and heating to boiling.

CHAS. FELHOEN, New York: *Explosive compound.* (Engl. P., No. 2266, June 9, 1879.)—Common gunpowder, but ungrained and unpolished, is mixed with 10 per cent. of nitronaphthalene.

GUSTAVE BISCHOF, London: *Preservation of butter.* (Engl. P., No. 2290, June 10, 1879.)—The butter is covered with a layer of spongy iron and water, so that the air is obliged to pass this layer before coming in contact with the butter.

W. KUBEL, Holzminden: *Disinfecting and fumigating tiles and blocks.* (Germ. P., No. 9520, Sept. 4, 1879.)—Porous tiles of plaster of Paris or earthenware charged with the disinfecting substances.

SCHIPPANG and WEHENKEL, Berlin: *Method of preparing iodized and uniodized cakes of collodion.* (Germ. P., No. 9890, Sept. 12, 1879.)—The collodion cakes are prepared by evaporation and strong pressure, applied simultaneously. A cake of iodized collodion contains layers of common collodion in such proportion, that by dissolving it a uniformly and properly iodized collodion is formed.