UNITED STATES PATENT OFFICE.

THOMAS J. BARRON, OF BROOKLYN, E. D., NEW YORK.

IMPROVEMENT IN CONCRETES FOR PIPES, TUBES, BUILDINGS, &c.

Specification forming part of Letters Patent No. **111,166**, dated January 24, 1871.

To all whom it may concern:

Be it known that I, THOMAS J. BARRON, of the city of Brooklyn, E. D., county of Kings, and State of New York, have invented a certain new Improvement in Cement, which I call "Coke or Fixed-Carbon Cement," for the purpose of forming a cheap and durable concrete for building materials, pavements, pipes, and tubes for conveying gases, heated air, and corrosive vapors and liquids; also for the ordinary purposes for which pipes and tubes are used, for the formation of ornamental articles and useful implements, and for all other purposes to which it is applicable, which concrete is hard, tenacious, strong, and indestructible, may be molded into any form, and can be made either dense or porous.

The object of my invention is to produce a cheaper and more reliable compound for the manufacture of the above-named articles and other uses aforesaid for which concretes are employed or of which molded articles are formed. This composition will stand without injury the extremes of heat and cold, and will bear the most sudden changes of temperature; and I hereby declare that the following is a full and exact description of the means and process used for producing the same.

I take coal-ashes, coke or coal dust, sand, gravel, broken or ground rock, furnace-slag, vitrified clays or earths, burned clays, being the waste of potteries, brick-kilns, &c., the refuse and tailings of quartz-mills, and other mills which grind and stamp ores, or any other material which is sufficiently hard and durable to form a concrete. With one or a combination of these materials I mix any of the hydrocarbons, liquid, semi-liquid, or solid, which will produce coke or fixed carbon, mingling them intimately, either with or without a limited amount of heat, according to the consistency or properties of the hydrocarbon used.

The mass is then ready for the mold, and, when molded, is placed in an oven or retort with sufficient heat to decompose the hydrocarbon and drive off the volatile portions, leaving the fixed carbon or coke as a durable cement, holding the particles together and forming a hard, solid mass, which may be either dense or porous, at the option of the manufacturer, according to the materials used and the mode of treatment.

The mixture is made as follows: Take, say, coal-tar or tar from the distillation of petroleum or asphaltum, reduced by heat to a liquid and combined thoroughly with furnace-ashes, sand, or other suitable material, or a combination of said materials, in the proportion of about seven of these to one of the hydrocarbon by measure. The composition, when ready, may be formed in molds of any shape, and, when taken from them, must be put in a muffle or oven exposed to sufficient heat to decompose and drive off all the volatile products of the tar in the form of gases. From one to five hours are required, according to the size of the piece to drive off the gases when it is removed and ready for use.

If it is required to have the material harder and free from pores it must be dipped in coal-tar, asphaltum, or other hydrocarbons and returned to the oven until the gases cease to generate, when it will be found solid, with a bright polished surface and free from pores, and will resist the actions of acids, alkalies, water, heat, and cold.

In forming pipes or other articles with this concrete, when set they should be taken from the molds or cases and dipped in warm coal-tar or heated asphaltum and drained before being placed in the oven and exposed to the heat, and when the process is repeated, as before described, it will have a hard, shining surface of black enamel.

I sometimes press the concrete so formed in a suitable press, for the purpose of adding to the density thereof.

I claim as my invention—

1. The concrete herein described, constructed of the materials and by the process substantially as described.

2. The process herein described for constructing concrete.

THOS. J. BARRON.

Witnesses:

CHAS. KENYON,

HENRY N. MILLER.