

UNITED STATES PATENT OFFICE.

WILLIAM J. BURKE, OF SCRANTON, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HENRY A. KAUFHOLD, OF SAME PLACE.

MANUFACTURE OF CARBON.

SPECIFICATION forming part of Letters Patent No. 655,920, dated August 14, 1900.

Application filed December 16, 1899. Serial No. 740,573. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM J. BURKE, a citizen of the United States, residing at Scranton, Lackawanna county, Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Carbon, of which the following is a specification.

My invention relates to carbon for electrical and other purposes.

10 The invention consists in a carbon for electrical, metallurgical, and other purposes manufactured from impalpably-powdered anthracite coal.

Heretofore in the manufacture of carbon for electrical purposes—such as arc-light points, contacts, brushes, &c.—coke from bituminous coal and coke from petroleum-stills and gas-retorts have been generally employed as a base with varying degrees of success. Carbon from such coke-bases is very expensive to manufacture, owing to the large number of separate operations required before the finished product is reached.

It is the object of my invention to cheapen and improve the manufacture of carbon so that a practically-pure article is produced at a small cost, also to produce a carbon capable of use with any and all of the various types of arc-lights.

30 The composition is as follows: anthracite coal in the form of an impalpable powder and just enough of an oleaginous substance, such as gas-tar, to moisten or dampen the powder. These ingredients are treated in the following manner: The anthracite coal is first reduced to an impalpable powder, or the impalpable powder around anthracite-coal breakers or washeries may be employed, and this powder is heated in an iron vessel having a loose cover for the escape of gas or vapor. This powder is heated to about 125° to 150° Fahrenheit, and the heat is kept up until the mass is evenly heated throughout. The tar or other oleaginous substance is placed in a separate vessel and heated to the same degree as the powder. Just enough of the heated tar is now added to the powder to moisten or

dampen it, and the mass is stirred until thoroughly mixed and the powder permeated by the tar, the heat being continued during this mixing. The heated mass will now be placed in heated molds of any desired shape or size according to the article desired to be produced, and the amount of pressure will also be governed by the density or porosity required in the article. The molds are thus heated or warmed to prevent any chilling or setting of the material operated on or treated. The filled molds will now have their tops applied, and the tops will be loosely covered with clay or other suitable material and placed in a retort, oven, or furnace, where they are subjected at first to a low heat which is gradually increased to about 210° Fahrenheit, at which it will be maintained for from ten to twenty-four hours, according to the kind of carbon required. It will be seen that the material being treated is protected from the atmosphere and from the direct action of the heating medium as it is confined within the molds. By thus graduating the heat and protecting the material in the molds changes take place in the constitution of the coal and cause it to cake, after which the heat is steadily increased until it reaches a degree equal to red-hot iron, at which it is continued until all impurities are driven off in the form of gases, when the heat is turned off and the molds and their contents are allowed to gradually cool. The result attained will be found to be an electrical conductor of substantially-pure carbon from anthracite coal, which contains prior to this treatment only about eighty per cent. carbon and is a non-conductor of electricity.

It will be seen that all necessity for coked material at the beginning of this process is obviated, as the coking and converting into carbon take place in the molds.

In testing my new carbon I find that it works as well in the inclosed arc-lamp as in the open arc-lamp, in both of which it proved highly satisfactory.

I do not confine myself to any particular

use, but claim the article for any and all purposes, nor do I restrict myself to the particular method herein described for forming it.

What I claim, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, carbon for electrical and other purposes manufactured from impalpably-powdered anthracite coal.
2. As a new article of manufacture, carbon for electrical and other purposes, manufac-

tured from impalpably-powdered anthracite coal, and an oleaginous substance, thoroughly mixed together and carbonized in a mold, or suitable receptacle.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. BURKE.

Witnesses:

GRAFTON L. MCGILL,
GEO. H. EVANS.