

# UNITED STATES PATENT OFFICE.

GEORGE LANDER, OF IRWIN, PENNSYLVANIA.

## IMPROVEMENT IN MODES OF COKING FOSSIL COAL.

Specification forming part of Letters Patent No. 124,688, dated March 19, 1872.

*To all whom it may concern:*

Be it known that I, GEORGE LANDER, of Irwin, in the State of Pennsylvania, have invented or discovered a new and useful Improvement in Utilizing the Slack of certain kinds of Coal not having sufficient bitumen to admit of its being coked by any known process.

Near Sharon, in the county of Mercer, in the State of Pennsylvania, and in the adjacent counties, also in many other parts of the United States, is found a species of fossil coal which has not sufficient bitumen to admit of its slack being converted into coke by any known process; therefore the slack of such coal has been considered worthless as an article of fuel for manufacturing purposes. I have described the slack of coal as not having sufficient bitumen to admit of its being coked by any known process, and have named one locality where such coal and slack may be found, for the reason that such description of the kind of slack which I utilize will be better understood than by trying to specify such slack or coal by any of the names given by mineralogists, who divide the various kinds of fossil coal into three species—viz., anthracite or glance coal, black or bituminous coal, and brown coal or lignite, under which are included many varieties, such as cannel coal, bovey coal, jet coal &c. The nature of my invention or discovery consists in the method hereinafter described for converting into coke the slack of that species of fossil coal which has not sufficient bitumen in it to admit of its being converted into coke by any process heretofore known, by intermixing with such slack a quantity of coal or the slack of coal possessing a greater quantity of bitumen, and then subjecting it to the treatment hereinafter described.

To enable others skilled in the art to which it is most nearly connected to use my invention or discovery, I will proceed to describe my method of converting the kind of slack above referred to into a good article of coke.

I mix from ten to twenty parts of lump coal, or the slack of that species of fossil coal containing a large percent. of bitumen, with about eighty or ninety parts of the slack of the coal which is deficient in bitumen. This mixing of the kinds of coal, the one having more and the other less bitumen than is required for the purpose of coking, will so equalize the two that the slack which would otherwise be

useless, when combined with a sweating process hereinafter described, may be readily converted into a good article of coke.

In the process of coking the slack I use any of the known forms of "coke-ovens," but prior to charging the oven with the mixed slack, or mixed slack and lump coal, I heat the oven to a high degree of heat. I then charge the oven with the mixed slack and allow it to "sweat" until the bitumen in the particles of the slack or slack and lump coal comes to their surface and is diffused through the whole mass, causing the particles to coagulate and form one mass, or a series of masses. At this point I ignite the mass or masses, and let it or them burn in the same manner that "coke-burners" do lump coal, or slack of such coal as that ordinarily used for making coke, after which it is removed from the oven in the usual manner, and by the means commonly used for that purpose. I then charge the oven with a second lot of the slack mixed as described, and allow its particles to sweat and coagulate, and burn it, as in the first instance. By coking the slack in the manner hereinbefore described, I am enabled to form a good and merchantable coke, deprived of bitumen, sulphur, or other extraneous or volatile matter, and thereby utilize the slack, which hitherto in the locality hereinbefore stated has been considered worthless. The importance and value of my invention or discovery will be more apparent by stating the fact that in the said locality, and the adjacent country, there are many large and important blast-furnaces and iron-works, and the utilizing of the large quantities of slack formed from the coal found in the said locality, will tend greatly to the development of the iron interests in that part of the country, as well as in other parts where such coal and slack may be found.

Having thus described my invention or discovery, what I claim as new is—

Utilizing the slack of that species of coal not having sufficient bitumen to admit of its being coked by any known process, by intermixing with such slack a quantity of bituminous coal, or the slack thereof, and then subjecting it to the treatment hereinbefore described.

GEO. LANDER.

Witnesses:

JAMES J. JOHNSTON,  
WM. W. S. DYRE.