

# United States Patent Office.

WILLIAM J. LYND, OF GOLDEN CITY, COLORADO TERRITORY.

*Letters Patent No. 93,629, dated August 10, 1869.*

## IMPROVED PROCESS OF PREPARING COKE FROM COLORADO AND OTHER COALS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To whom it may concern:*

Be it known that I, WILLIAM J. LYND, of Golden City, in the county of Jefferson, and Territory of Colorado, have invented or discovered a new and useful Process of Coking the Different Species of Coals found in Colorado Territory, and in other parts of the United States of America, and at present mined in Jefferson county and in Boulder county of said Colorado Territory, said coals being called by some "glance," by others, "dry bituminous," and by others, "lignite;" and I do hereby declare the following to be a full and exact description of the same.

The coal, to prevent slaking and crumbling by the action of the air, is placed, as soon as possible after it is mined, in a coking-kiln or oven surmounted by a chimney, so arranged as to be hermetically closed or made air-tight, when desired, at the base, where it (the chimney) touches or rises from the kiln or oven. That oven is best which is of the largest practicable size, because the greater the quantity of this coal in ignition together, the better will be the carbonization. A kiln or oven without a chimney will answer, but it should be provided with a covering of suitable material, to close air-tight the aperture allowed for the escape of the aeriform or gaseous products. The covering is better when quite thick, say from three to nine inches. It can be made air-tight by the application of any cement, such as mortar, clay, or wet moulder's sand.

Instead of a kiln or oven, retorts may be used; but the retorts should be provided with doors or valves, to perfectly close the retorts, when the gases or impurities have been expelled, so as to exclude the air, and to confine the heat of the coals in combustion. But the coking of the above-mentioned coals by retorts is not, by any means, so thorough or so certain as by the use of the kiln or oven, and is also more expensive.

The kiln or oven being furnished with coals, the coal is kindled, and, when all the coal is in a state of combustion, the draught is shut off; or, if there be several draughts, to insure thorough and rapid ignition, then the lowest draught is shut off first, and the rest, successively, as the ignition progresses.

The covering at the base of the chimney is closed by degrees as the smoke, gases, or aeriform products escape; and, when the impurities—viz, tar, (a little,) ammonia, bitumen, sulphur, and other fuliginous and volatile products—are nearly or quite removed, the covering is completely closed, and the kiln hermetically shut or made air-tight.

This process will carbonize the above-mentioned coals. But the process is hastened, assisted, and improved by the introduction of carburetted-hydrogen gas or vapor from oil, coal-tar, or other hydrocarbons.

The gas or vapor should be introduced by one or several pipes, so that the gas or vapor may reach all the coals, when the closing is nearly completed.

Instead of the gas or vapor, the hydrocarbon-fluid may be introduced, generating, by contact with the coals, the gas or vapor.

If pipes be used for the gas or fluid, as above specified, they should be closed tightly at the places where they enter the oven.

A little gas or vapor, or hydrocarbon-fluid, may be introduced by one pipe for a short time, after the kiln is elsewhere, or in all other respects closed, and then this last aperture of the pipe be entirely shut where it touches the oven.

By thus proceeding, a coke is obtained from the afore-said coals which is well adapted for smelting and other metallurgical operations, and all purposes for which an intense heat is required.

Having thus described my said invention, and the manner in which the same is or may be carried into effect,

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

The process, substantially as herein described, of making coke from coals, such as herein referred to.

In testimony whereof, I have signed my name to this specification, before two subscribing witnesses.

WM. J. LYND.

Witnesses:

WM. ARMOR,  
ARTHUR C. HARRIS.