

# United States Patent Office.

WILLIAM JOHN LYND, OF GOLDEN CITY, COLORADO TERRITORY.

*Letters Patent No. 98,606, dated January 4, 1870.*

## IMPROVED PROCESS OF PREPARING COAL FOR SMELTING ORES.

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

*To all whom it may concern:*

Be it known that I, WILLIAM JOHN LYND, of Golden City, in the county of Jefferson, and Territory of Colorado, have invented or discovered certain Improvements in the Preparation of the Coal of Colorado and similar coal wherever found in the United States, said coal being called by some, dry bituminous, and by others, glance, and commonly called lignite, and said coal being mined in Jefferson county and elsewhere in Colorado Territory, so that said coal can be used in place of coke, or charcoal, or anthracite coal, for smelting, blacksmithing, and other uses to which coke, charcoal, or anthracite is applied; and I do hereby declare that the following is a full and exact description of the same.

The coal is placed in a retort, or other receptacle, large or small, (of any suitable material,) put over, or in, or attached to a furnace or other structure, so as to receive the heat necessary to expel the bitumen, sulphur, and other extraneous or volatile matter. Heat is applied, and when the foreign or volatile matters are driven out, a light charred substance, easily lighted, and giving out intense heat, remains. This will answer for smelting, &c.

Usually, when thus preparing the coal, and converting it into what may be called coke, the pipe or neck of the retort is sealed up, in order to the more perfect carbonization of the mass. But I have also found that coal called "cannel lignite," and other coals of a like nature, can be coked in a retort, even though not closed altogether from the air, and I therefore contemplate coking the coal, either partially or entirely, in a retort whether sealed up or open. In this preparation of the coal, the retort will require usually to be heated to a cherry-red heat, and maintained for some time at that heat.

An improvement on the above is the following: To the coal in the retort add quick-lime, in quantity about one-sixth of the coal or less. Apply the heat. The carbon of the coal left, after the inflammable parts have been expelled, will be found impregnated with the lime, and so carries the lime-flux in itself. This preparation melts iron readily, and is well adapted for iron-smelting and all metallurgical operations.

An improvement on this last is as follows: Take the coal as prepared with lime, and place it in a furnace, thoroughly ignite it, and then hermetically close it from the air. This gives coke of an extraordinary caloric power.

Another method of preparing the coal is this: Grind the coal to a powder, expel the gases, &c., by heat; then add to the powder, pine-tar or other hydrocarbon; place again in the retort, (after the mixture of coal-powder and coal or pine-tar has been pressed into balls or bricks,) and close the retort, so as nothing may escape. Then apply a gentle heat, until the balls or bricks are hardened. This is excellent fuel for smelting or blacksmithing.

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

1. The mode of coking or preparing Colorado coals, and other coals of a similar kind, in an open or closed retort, substantially in the manner described.

2. The improvements in coking or preparing coals, substantially as above described, for the uses specified.

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

WM. J. LYND.

Witnesses:

WILLIAM AMOR,  
RICHARD H. HARRIS.