UNITED STATES PATENT OFFICE.

WILLIAM S. SUTHERLAND, OF COOMBS WOOD, HALESOWEN, ENGLAND.

IMPROVEMENT IN PROCESSES FOR THE PRODUCTION OF CARBONIC-OXIDE GAS FOR HEATING AND WELDING.

Specification forming part of Letters Patent No. **194,501**, dated August 21, 1877; application filed March 12, 1877.

To all whom it may concern:

Be it known that I, WILLIAM SEDDON SUTHERLAND, of Coombs Wood, Halesowen, in the county of Worcester, England, engineer, have invented a new and useful Process for the Production of Carbonic-Oxide Gas for Heating and Welding Purposes, which process is fully set forth in the following specification.

This invention has for its object to convert carbonaceous fuel into carbonic oxide with as little expenditure of heat as possible, when the said fuel is burned with a supply of air insufficient to produce carbonic acid, and consists in causing the air to support combustion to travel upward around the outside of the producer, thence downward near the inside surface of the producer, and, finally, into the producer, beneath the fuel, where combustion takes place. The products of the said combustion pass in an upward direction through unburned fuel, thence in a downward direction round the outside of the producer to the main or any desired point for use.

By causing the air and products of combustion to travel in the manner stated, the heated products of combustion travel in contact with, but in the opposite direction to, the cold air to support combustion, so as to heat the said air and cool the products. Radiation and loss of heat from the producer are thereby greatly prevented.

I claim—

In the manufacture of carbonic oxide, the process herein described, consisting in heating the incoming air by the outgoing products of combustion, whereby radiation and loss of heat from the producer are prevented, and the fuel is burned with a supply of air insufficient to produce carbonic acid, substantially as specified.

WILLIAM SEDDON SUTHERLAND.

Witnesses:

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