

# UNITED STATES PATENT OFFICE

FREEMAN BROWN, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO HIMSELF, SAMUEL LAUBHAM, A. WASHINGTON CHASE, AND CHARLES H. CHASE, OF SAME PLACE.

## IMPROVEMENT IN COMPOSITIONS FOR FUEL.

Specification forming part of Letters Patent No. 174,348, dated March 7, 1876; application filed January 17, 1876.

*To all whom it may concern:*

Be it known that I, FREEMAN BROWN, of Haverhill, in the county of Essex and State of Massachusetts, have invented a new and useful Compound to be Used with Coal or Fuel for the More Economic Production of Heat; and I do hereby declare that the following is a full, clear, and exact description of the said compound, its ingredients, and the proportions thereof, and the mode of compounding the same, as well as the manner in which such compound is to be used or combined with the coal or fuel.

The object of my invention is to provide a compound which, when combined or mixed with coal, tan, &c., and the same is consumed in the furnace of a boiler, shall generate the amount of heat or steam required, with much less cost than can be effected by the employment of the coal or fuel alone.

The ingredients of the compound are lime, rosin, brimstone, saltpeter, and sawdust. The proportions of each are very nearly as follows: Twenty-four pounds of lime, twenty pounds of rosin, eight pounds of brimstone, two pounds of saltpeter, and from twelve to twenty pounds of sawdust, in accordance with the kind and fineness of the coal or fuel used.

The lime, rosin, brimstone, and saltpeter are to be ground or reduced to a comminuted state, as fine as the sawdust. After having been reduced, they are to be thoroughly commingled, so as to constitute one homogeneous mass. This having been done, the compound is ready for use.

The amount or quantity of the compound to be added to the coal or fuel to produce the best results depends upon the kind and fineness of the coal or fuel employed. When

screenings or coal-dust or tan is used, from three to five per cent. of the compound is a good proportion. If nut coal or coke is employed, two per cent., by weight, is a good proportion. If stove, or a larger, coal is employed, a greater or less amount of the compound may be used, in accordance with the intensity of the heat required. In all these cases the compound is to be mingled with the coal or fuel, so as to render the mass homogeneous.

With the fine dust or screenings of anthracite and bituminous coal, this compound is especially valuable. I have found by actual experiment, in running an engine in which a given amount of steam was required per day, and which required the consumption of one-half ton of coal-screenings to attain, that by mixing from three to five per cent. of the compound with the coal I reduced the consumption of the coal upward of thirty per cent., and thereby effected a saving in the running of the engine fully twenty-five per cent., while at the same time a uniform consumption of the fuel was maintained.

Having described my invention, what I claim is—

A compound to be used with coal or fuel in the economic production of heat, consisting of lime, rosin, sulphur, saltpeter, and sawdust, in the proportions substantially as set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

FREEMAN BROWN.

Witnesses:

E. G. WOOD,  
ALVIN B. ALLEN.