

# UNITED STATES PATENT OFFICE.

H. S. LUCAS, OF CHESTER, MASSACHUSETTS.

## IMPROVED ARTIFICIAL FUEL.

Specification forming part of Letters Patent No. 43,695, dated August 2, 1864.

*To all whom it may concern:*

Be it known that I, H. S. LUCAS, of Chester, in the county of Hampden and State of Massachusetts, have invented an Improved Fuel; and I do hereby declare that the following is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to the preparation of fuel from coal and peat; and it consists in the combination together of peat in a finely-divided condition and pulverized coal, these two components being thoroughly mixed and compressed, so as to be formed into cakes or lumps suitable for transportation and use.

It is well known that in the operation of mining coal vast quantities of coal-dust and fine coal collect, which are thrown aside as useless, such throwing aside being also in itself expensive, as the said fine coal has to be removed from the vicinity of the screening apparatus to prevent it from accumulating and becoming an obstruction. This material is generally of the very best of coal, free from slate, but is of no use in the common stoves and furnaces, because it is too fine to burn freely, it having a tendency to smother a coal-fire when thrown upon it. If it could be formed into lumps or cakes possessing density and tenacity enough to bear transportation and to burn without disintegration, such material would possess value as a fuel. It is also well known that there exist on the lines of many of the railroads of the country vast peat-fields. Peat is but little used as a fuel, because of its bulk and the difficulty of drying and compressing it.

The purpose of my invention is to bring these two substances together, and by intimately mixing and compressing them to produce a new and valuable fuel out of materials which are now considered as comparatively worthless; and it is in this that my invention consists.

It consists, further, in combining with fine coal peat from which the fibrous or undecomposed vegetable matters have been removed. In compressing peat to extract the moisture therefrom much of the difficulty in bringing it to a thoroughly dry state arises from the fact that the fibers of the undecomposed por-

tions consist of vegetable tubes or vessels containing water, which tubes, surrounded by elastic matter, are hard to crush. Therefore by first extracting such fibers and then mixing the fine coal and peat and compressing them together I obtain a still more valuable fuel.

In carrying out my invention the peat may be first reduced in a triturating-machine to a pulpy mass and then mixed with the coal-dust, and the homogeneous mixture compressed and formed into cakes; or the peat may be pulverized and partially dried before being combined with the coal; but in either case the moisture from the peat, being of a glutinous character, will serve, when the peat and coal are compressed together, to cement the two ingredients into one solid mass possessing the requisite density and tenacity for a portable and useful fuel, both for domestic use and for employment in manufactures.

I am aware that peat has been compressed to extract the water from it and to bring it into a dense form. I am also aware that fine coal has been mixed with tar or pitch and then compressed and formed into cakes, and that other finely-divided substances have been mixed with resinous matters; but I consider the fuel produced by me to possess advantages over either of them. Peat, in itself, when properly dried, possesses only half the heating-power of coal, and the combination of pulverized substances by the aid of resinous matter is too expensive, while the fuel produced is dangerous on account of its liability to spontaneous ignition. By my production a perfectly safe and unobjectionable fuel is produced at a low cost and in a convenient form for use.

What I claim is—

1. A fuel produced by combining and compressing fine coal and peat, substantially as set forth.

2. In a fuel made from coal and peat combined, the employment of peat from which the undecomposed portion has been artificially removed.

HEMAN S. LUCAS.

Witnesses:

E. D. COOKE,  
JOHN B. TAFT.