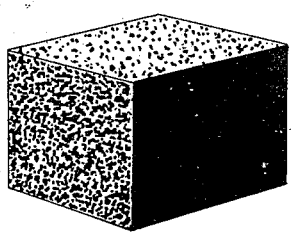
F. F. E. MUCK.
Artificial Fuel.

No. 212,150 Patented Feb. 11, 1879.



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UNITED STATES PATENT OFFICE.

FRIEDRICH F. E. MUCK, OF BOCHUM, GERMANY.

IMPROVEMENT IN ARTIFICIAL FUEL.

Specification forming part of Letters Patent No. **212,150**, dated February 11, 1879; application filed November 12, 1878.

To all whom it may concern:

Be it known that I, Dr. FRIEDRICH F. E. MUCK, of Bochum, in the Empire of Germany, have invented certain new and useful Improvements in Artificial Fuel; and I hereby declare the same to be fully, clearly, and exactly described as follows:

My invention relates to that class of fuels composed of coal dust or screenings and a substance somewhat of the nature of a cement, having for its purpose to agglomerate the fine particles of coal into a solid mass or brick.

Bitumen in its various forms has heretofore been a favorite material for this purpose; but its use is open to the objection that the fuel bricks formed by its aid are extremely liable to crumble and disintegrate.

I have succeeded in forming an artificial fuel from coal-dust which is not open to the above nor any other objection, the bricks formed as hereinafter described possessing a degree of hardness and strength nearly, if not quite, equal to that of the natural coal in mass.

The material I make use of, in conjunction with coal-dust, is prepared from the *Fucus*, or sea-weed, which is found in great profusion on sea-coasts, notably that of the German sea.

A few days after being gathered, the *Fucus*, which at first is of a dark olive-green color, becomes covered with a clammy slime, which is very tough and tenacious, and admits of being drawn out into threads, and may be separated from the rest of the plant by washing. In practice, however, I permit the *Fucus* to remain in a moist state in suitable tanks, exposed to the air for from four to six months, when the whole mass is transformed into a pasty material, most excellently adapted for the purpose to which I devote it. This pulp will now dry up to a hard mass, having the general physical properties of horn, and consists, as used, of about nineteen per cent. of solid matter of unknown chemical composition, and eighty-one per cent. of water. Twelve parts, by weight, of fine coal-dust are then thoroughly kneaded, in any approved form of machine, with five parts of the mass referred to, the resulting material being then formed into bricks and dried at the natural temperature. The so-formed bricks are hard and smooth, and do not crumble or disintegrate when heat is applied, but burn exactly after the manner of natural coal.

The mass of *Fucus* used to form the bricks may be evaporated to a small volume, for transportation from the coast to the point at which the fuel is to be made, and there mixed with the proper proportion of water for incorporation with the coal-dust.

The proportions hereinbefore given for forming the fuel add but about fifty-six per cent. to the total ash.

A cubical fuel brick is shown in the accompanying drawing.

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

1. An artificial fuel consisting of coal-dust and decomposed *Fucus*, substantially as set forth.

2. The process described of preparing artificial fuel, consisting in incorporating together coal-dust and decomposed *Fucus*, forming into suitable shapes, and drying at the natural temperature, as set forth.

DR. FRIEDRICH FERDINAND ERNST MUCK.

Witnesses:

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