UNITED STATES PATENT OFFICE.

DAVID AIKMAN, OF MONTREAL, QUEBEC, CANADA.

PEAT FUEL.

SPECIFICATION forming part of Letters Patent No. 390,546, dated October 2, 1888.

Application filed March 15, 1888. Serial No. 267,231. (Specimens.)

To all whom it may concern:

Be it known that I, DAVID AIKMAN, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have invented a certain new and useful Improvement in Peat Fuel; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to the preparation of peat to adapt it for use as fuel, and more particularly to the product of the process described in my application for United States Patent filed July 9, 1887, Serial No. 243,888, although not confined to the method and apparatus described therein, as the same result may be produced by other means.

Heretofore the semi-liquid peat has been taken from the bog and compressed and dried in blocks by various processes and machines; but in none of these instances has a block been produced which has been freed from any but a small proportion of moisture, nor yet has it been possible to make such blocks hard enough to prevent them from being easily broken into small pieces, which are too rapid of consumption to be valuable as fuel. The most important objection, however, to the fuel prepared in the old way is that the volatile combustible matter contained in the peat has not been liberated from the minute cells of the fixed carbon and then sufficiently combined with the particles or fibers thereof as to insure, when ignited, a steady and equal combustion of both elements simultaneously, the result being that, on account of the volatile elements being practically by themselves, (in the old peat blocks,) they are consumed so rapidly by a succession of "flashes" that the fixed carbon is never properly ignited and falls away to ashy particles directly the gases have been eliminated, thus practically permitting only a slight and temporary incandescence of the fixed carbon, and consequently producing the minimum of heating-power. To obviate these serious objections, it is necessary that the volatile combustible elements should first be set free from the cells in which they are naturally sealed and the particles or fibers themselves then impregnated or saturated with this combustible matter in such a way as to retain the inflammable and incandescent qualities of all the predominant elements in such a combination that they will ignite and burn together, and at the same time produce a block of fuel so closely compressed and dried as to possess the greatest amount of specific gravity, as well as being proof against ordinary atmospheric influences and the action of water.

In manufacturing my improved fuel I prefer to take the peat in a semi-liquid or pulpy state, and after removing the sticks by any of the well-known devices evaporate and remove the surplus water by stirring the pulp in a steam-heated vessel or chamber, and then complete the drying process by passing the peat through heated rollers or between rollers and heated plates. This liberates the lighter volatile vapors and leaves the peat in small flakes or particles; but while undergoing the above operation the carbon-cells are only partly broken, and in order to finish what may be called the "fracture" of the cells and saturate the free carbon again with the highly-inflammable tarry and resinous substances and bind the same permanently together in a solid compact mass having the qualities above specified, I direct the peat thus dried and prepared into molds kept at a high temperature by the direct application of fire, or by using superheated steam, and there reduce the same to a charred or carbonized condition. While this carbonizing is going on the peat is kept under heavy pressure in the molds by plungers or like devices (also brought to a highly-heated condition) until the fibrous or vegetable matter and the volatile elements are thoroughly incorporated together and the exterior of the block is coated with the resinous matter and glazed by the friction and heat, and thus rendered water and air proof.

A chemical analysis of my improved peat block is substantially as follows:

Moisture	3.84
Volatile combustibles	41.22
Fixed carbon	48.04
Ash	6.90
	100.00

What I claim, and desire to secure by Letters Patent, is as follows:

As a new article of manufacture, a pressed fuel-block composed of peat carbonized by heat and condensed by pressure to such an extent that the constituent tarry matter is thoroughly intermixed with the carbonized matter and a black external tarry glaze is formed on the surface of the block, substantially as specified.

Montreal, March 7, 1883.

DAVID AIKMAN.

Witnesses:

STEPHEN ROBERTS,

JOHN G. SHAW.