

# UNITED STATES PATENT OFFICE

WILLIAM HALSTED, OF TRENTON, NEW JERSEY.

## IMPROVEMENT IN THE MANUFACTURE OF ARTIFICIAL FUEL.

Specification forming part of Letters Patent No. 57,708, dated September 4, 1866; antedated August 10, 1866.

*To all whom it may concern:*

Be it known that I, WILLIAM HALSTED, of the city of Trenton and State of New Jersey, have discovered a new and Improved Mode of Making Artificial Fuel of certain ingredients—viz., peat, bog-turf or turf of salt-marsh, refuse coal-dust, sawdust, pitch-tar, rosin, petroleum-oil or other oil, or other ingredients—mixed, combined, or compressed together in various ways, modes, forms, and combinations, of which the following is a specification.

The nature of my invention is the combining together of the ingredients above or hereinafter mentioned in certain ways, modes, and proportions, and treating them in the way or substantially as hereinafter described.

The first kind is made by grinding, tempering, or mixing together peat and coal-dust or refuse coal, and forming it into blocks, and then drying it by natural or artificial heat.

The second is made in the same way as the first, except that the material is subjected to pressure before it is dried, to aid and assist in drying and solidifying and rendering it more compact.

The third kind is made by grinding, tempering, or mixing together of salt-marsh turf and coal-dust or refuse coal, forming it into blocks or cakes, and drying it by natural or artificial heat.

The fourth kind is made the same as the third, except that it is subjected to pressure before it is dried.

The fifth kind is made by grinding, tempering, or mixing together peat or salt-marsh turf with about equal quantities of coal-dust or refuse coal, or from twenty to fifty per cent. of refuse coal or coal-dust with from four to twenty per cent. of petroleum, or of asphaltum, or of bitumen, or of coal-tar or other tar, and forming it into cakes or blocks, and drying them by natural or artificial heat.

The sixth kind is made the same as the fifth kind, except that the material is subjected to pressure before it is dried.

The seventh kind is made thus: Take peat or turf of salt-marsh and cut, break, or mold it into blocks or forms of any ordinary size for burning, and then dip them into or saturate them with heated coal-tar or melted asphaltum,

bitumen, pitch, or common tar, and then roll them in or cover them well with refuse coal-dust, sawdust, or refuse tanners' bark, and after they are dry then dip them wholly or partially into petroleum-oil, fish or other oil, turpentine, naphtha, oleine, or melted grease, or sprinkle them with the same.

The eighth kind is composed of peat or turf of salt-marsh, cut or compressed into rectangular or other suitable forms for burning, and then dried or partially charred, and then dipped or partially dipped in any of the liquids mentioned in the description of the seventh kind, or saturated with or sprinkled over with the same.

The ninth kind is made as described in the eighth kind, but dipped in a mixture made of one part of pitch or rosin, one to two parts of petroleum, heated together and mixed with from five to seven parts of sawdust or coal-dust, and then dried.

The tenth kind is composed of ground or pulverized peat or turf of salt-marsh, mixed together with from one-quarter of one per cent. to one per cent. of pitch or rosin, and from one to four per cent. of petroleum-oil, and from two to eight per cent. of coal-tar or ordinary tar, all melted and heated together, and mixed with from ten to fifty per cent. of refuse coal or of sawdust, or with about equal parts of refuse coal and sawdust, and then compressed into forms and dried.

The eleventh kind is composed of ground or pulverized peat or turf of salt-marsh, mixed with from twenty to sixty per cent. of refuse coal-dust, sawdust, or refuse tanners' bark, and then heated to about 180° of Fahrenheit, and while in its heated state compressed into forms or blocks suitable for burning.

The twelfth kind is composed of from two to ten per cent. of tar, pitch, bitumen, or asphaltum, or of fish or other oil, petroleum, naphtha, lard, or grease, together with from two to four per cent. of water, and from two to four per cent. of rye bran, wheat bran, buckwheat bran, flaxseed bran, and then pieces of peat or salt-marsh turf of suitable sizes for burning, either compressed into forms or otherwise dipped or rolled into the mixture, or saturated with the same, and then dried.

The thirteenth kind is composed of from twenty to sixty per cent. of refuse coal or coal-dust or of sawdust, or about equal parts of each, with from twenty to eighty parts of pulverized peat or turf of salt-marsh, mixed with the ingredients stated in the twelfth kind, and pressed into form and then dried.

The fourteenth kind is the same as the thirteenth, only all the ingredients are heated together to a temperature of from 90° to 180° of Fahrenheit, and while heated compressed into suitable forms.

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

The combination, mixture, and treatment of the ingredients above mentioned, substantially as above described, and intended to produce the same effect.

W. HALSTED.

Witnesses:

WM. R. BRADFORD,  
E. TASTET.