

# UNITED STATES PATENT OFFICE.

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## COMPOSITE FUEL AND THE ART OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 776,365, dated November 29, 1904.

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*To all whom it may concern:*

Be it known that I, MARK R. SPELMAN, a citizen of the United States of America, and a resident of the borough of Manhattan, New York city, in the State of New York, have invented a new and useful Improvement in Composite Fuel and the Art of Making the Same, of which the following is a specification.

This invention relates to liquid fuel for use in steam-boiler furnaces; and it consists in a novel composition of matter and the art of compounding the same, as hereinafter set forth and claimed.

The improved composite fuel consists of finely-ground carbonaceous solid matter, preferably anthracite or bituminous coal ground to a flour as fine as it is possible to grind it, or it may be charcoal, wood, sawdust, peat, or other carbonaceous material ground fine. Such finely-ground carbonaceous material is mixed during the grinding with molasses, crude petroleum, or a similar inflammable semiliquid. The compound is then made thin by reducing it, say, to the density of ordinary fuel-oil by the addition of a burning fluid, which may be crude alcohol or a light hydrocarbon, and it may be stored in this reduced condition.

The composite fuel is burned under boilers by pumping it through pipes and throwing it into the furnace in the form of spray by means of a suitable atomizer. When thus thrown into the furnace in the form of spray, the fuel is practically converted into gas the moment it comes in contact with the furnace heat of 500° or 600° intensity and is burned in the form of gas.

The object of grinding the coal, charcoal, or other carbonaceous solid matter in a semiliquid, such as molasses or crude oil, is to prevent all danger of explosion or waste, and the object of thinning the compound with crude alcohol or other burning fluid is to get it to the proper consistency to pump through pipes and to form a spray. I am aware that

oil has been burned in this way in spray form and that coal and other carbonaceous matter has been ground to a flour and blown into furnaces and burned dry; but I know of no liquid composite fuel including such finely-ground carbonaceous material, and by grinding the latter in molasses or crude oil I avoid the great danger to life and property which has heretofore been involved in reducing such carbonaceous material to fine powder or flour, owing to its liability to ignite and explode.

Having thus described said composite fuel and the art of making the same, I claim as my invention and desire to patent under this specification—

1. A composite fuel composed of carbonaceous solid matter ground to a fine flour, an inflammable semiliquid in which such carbonaceous material may be so ground, and an inflammable liquid thinning the compound and adapting it to be pumped through pipes and to be burned in the form of a spray.

2. A composite fuel composed of coal ground to a fine flour, an inflammable semiliquid in which such coal may be so ground, and an inflammable liquid thinning the compound and adapting it to be pumped through pipes and to be burned in the form of a spray.

3. A composite fuel composed of carbonaceous solid matter ground to a fine flour, molasses in which such carbonaceous material is so ground, and an inflammable liquid thinning the compound and adapting it to be pumped through pipes and to be burned in the form of a spray.

4. A composite fuel composed of carbonaceous solid matter ground to a fine flour, an inflammable semiliquid in which such carbonaceous material may be so ground, and crude alcohol thinning the compound and adapting it to be pumped through pipes and to be burned in the form of a spray.

5. A composite fuel composed of coal ground to a fine flour, molasses in which such carbonaceous material is so ground, and crude alcohol

thinning the compound and adapting it to be pumped through pipes and to be burned in the form of a spray.

6. The art of making the within-described  
5 composite fuel consisting in grinding a suitable carbonaceous material to a fine flour beneath a suitable semiliquid, and thinning the compound by the addition of a suitable in-

flammable liquid to a consistency adapting it to be pumped through pipes and to be burned 10 in the form of a spray, substantially as hereinbefore specified.

M. R. SPELMAN.

Witnesses:

J. E. RUNCIE,  
ALBERT WRIGHT.