

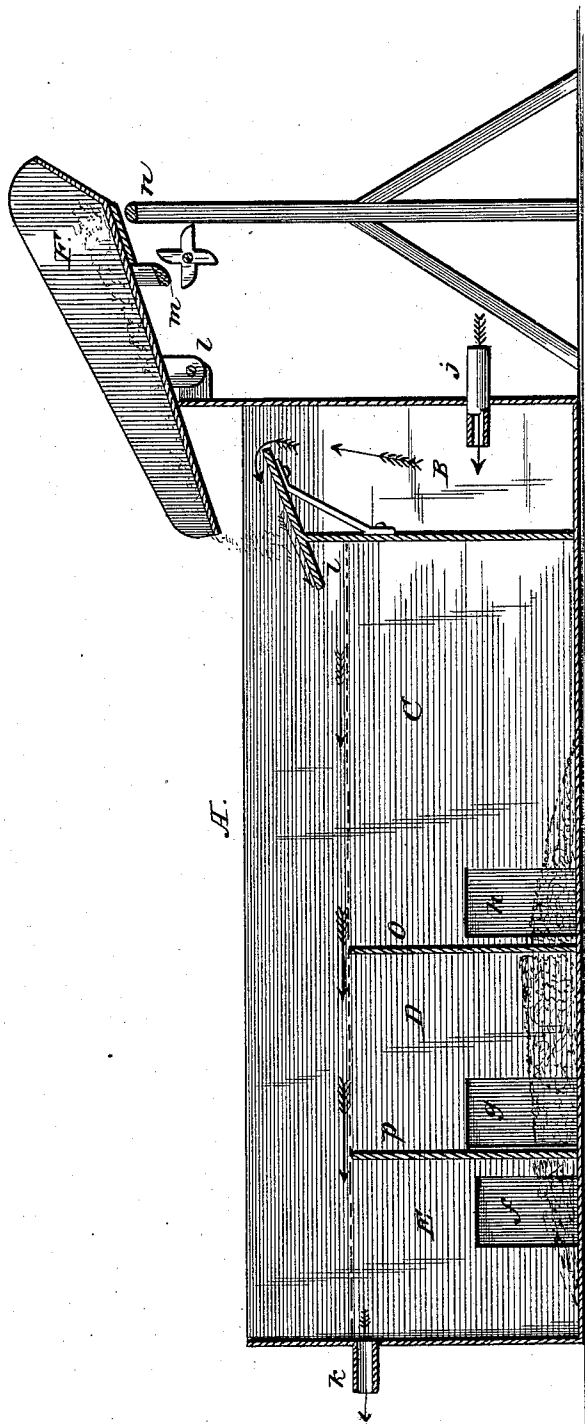
(No Model.)

J. J. JOHNSTON.

COMPOSITION OF MATTER FOR THE MANUFACTURE OF GAS.

No. 312,728.

Patented Feb. 24, 1885.



WITNESSES:

*Wm. S. Dietrich*  
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# UNITED STATES PATENT OFFICE.

JAMES J. JOHNSTON, OF COLUMBIANA, OHIO, ASSIGNOR TO THE LIGHT  
AND FUEL COMPANY, OF SAME PLACE.

## COMPOSITION OF MATTER FOR THE MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 312,728, dated February 24, 1885.

Application filed July 26, 1884. (No specimens.)

*To all whom it may concern:*

Be it known that I, JAMES J. JOHNSTON, of Columbiana, in the county of Columbiana and State of Ohio, have invented a new and useful  
5 Improvement in Composition of Matter for the Manufacture of Gas; and I do hereby declare the following to be a full, clear, and exact description thereof.

10 The drawing shows a side elevation of the apparatus used.

My invention relates to a new composition of matter for the manufacture of gas; and it consists of pulverized bituminous coal having the sulphur mechanically separated there-  
15 from, and oleaginous matter and water combined with said pulverized and desulphurized coal, so as to form a homogeneous compound, which will hereinafter more fully and at large appear.

20 To enable others skilled in the art with which my invention is most nearly connected to make and use it, I will proceed to describe it.

25 I pulverize bituminous coal, or take the slack of said coal, and separate mechanically the sulphur therefrom by the means herein described.

In the accompanying drawing, A represents a tank having compartments B C D E, doors *f g h*, chute *i*, water-supply pipe *j*, and waste or flow-off pipe *k*. To one end of the tank, at *l*, is pivoted a hopper, F, which may be agitated by an eccentric wheel *m*, which, lifting said hopper and allowing it  
35 to strike against the upper end of the post *n*, will jar it so that the pulverized coal will be gradually and evenly distributed from the lower end of said hopper upon the water flowing over the chute *i*. The pipe *j* may  
40 be connected with a water-supply, and when the tank A is sufficiently filled with water, so that a current is flowing down the chute *i* and over the partitions *o p* and out through the flow-off or waste pipe *k*, and the agitation of the hopper F commenced, the operator charges into the hopper the pul-  
45 verized coal or "coal-slack." The agitation and jarring of the hopper will cause it to be gradually and evenly distributed over the

downflowing current of water passing over 50  
chute *i*, and said coal is carried on the current of water over the compartment C and partition *o* to compartments D E, where it is collected by any suitable means, and that  
55 which has become saturated with water and has sunk to the bottom of said compartments may be removed at suitable intervals through doors *f g*. The sulphur in said coal or coal-slack being of greater specific gravity than the coal, it will separate therefrom  
60 by precipitation while passing over the compartment C, and will settle down on the bottom of said compartment, from which it may at suitable times be removed through the door  
65 *h*. The pulverized and desulphurized coal is then dried by any suitable means and heated to a temperature of from about ninety (90) to one hundred and twenty (120) degrees Fahrenheit, then to each one hundred (100)  
70 pounds (avoirdupois) of said dried and heated coal is added about twenty (20) pounds of water heated to about the same temperature. The coal should be spread out and the water  
75 evenly sprinkled over it, and then the coal thoroughly stirred, after which the coal thus treated is again spread out, and about ten (10) pounds of petroleum-oil is sprinkled  
80 over it, and then the coal is again thoroughly stirred, so as to form a homogeneous compound consisting of bituminous coal, oil, and water, from which composition of matter a very superior quality of gas may be manufactured for the purposes of light and heat.

The proportions of oil and water may be 85 varied in accordance with the variation in the quantity of oleaginous matter and bitumen in the coal.

Having thus described my improvement, what I claim is— 90

1. The composition of matter hereinbefore described for the manufacture of gas, consisting of pulverized and desulphurized coal, water, and oil, forming the homogeneous mixture herein specified. 95

2. In the manufacture of the composition of matter hereinbefore described, the process which consists in mechanically desulphuriz-

ing pulverized coal, then heating the same to  
increase its water-absorbing capacity, sprink-  
ling it with water, and finally with oil, there-  
by forming a homogeneous mixture where-  
5 in the water is retained by the surrounding  
oil-particles, substantially as shown and de-  
scribed.

In witness whereof I have hereunto set my  
hand this 21st day of June, A. D. 1884.

JAMES J. JOHNSTON.

Witnesses:

A. C. JOHNSTON,  
A. C. ELLIS.