

# UNITED STATES PATENT OFFICE.

EDWIN D. McCracken, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, HENRY J. NEWTON, HENRY B. KIRKLAND, AND JOSEPH R. HUSSON, OF NEW YORK CITY, AND EDWIN R. KIRK, OF HOBOKEN, N. J.

## IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **130,437**, dated August 13, 1872; antedated August 10, 1872.

*To all whom it may concern:*

Be it known that I, EDWIN D. McCracken, of the city, county, and State of New York, have invented a new and useful Improvement in the Manufacture of Illuminating-Gas; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification.

One object of this invention is to provide for the conversion into incondensable illuminating or combustible gases, of the whole or greater portion of the tar and condensed products ordinarily resulting from the manufacture of illuminating gas from coal and other substances, and so to prevent the accumulation of graphite or solid matter upon the interior of the retort or pipe leading therefrom, thereby not only effecting economy by using up the tar for the manufacture of gas, but preventing the filling up of the retorts or choking of the passages or pipes leading therefrom. Another object is to provide for the manufacture of gas from tar alone, or from petroleum, naphtha, and other carbonaceous oils or liquids.

The invention relates to the introduction of air into the retort during the process of manufacture; and consists in its introduction in a heated condition at or close to that point where the tar or liquid matter enters or re-enters the retort, so that it meets the incoming liquid at its advent to the retort.

In applying my invention to retorts in which gas is made from coal, I propose generally to use such provision as is described in the Letters Patent No. 105,351, dated July 12, 1870, granted to myself and others, for the return of the tar from the hydraulic main to the retort, and which is represented in the drawing accompanying this specification, said drawing being a longitudinal vertical section of the retort and its appurtenances. In such case I introduce the air through a pipe, I, which enters the retort at or near the front end, and which extends longitudinally through the upper part of the retort nearly to the rear end

thereof, so that the air is heated in said pipe by the heat from the retort, and so heated is delivered into the retort close to the mouth of the pipe D by which the tar enters. In any case I make suitable provision for heating the air, and otherwise so arrange the air-pipe that it will deliver the air into the retort close to the mouth of the pipe where the tar or other liquid enters or re-enters. The heated air so introduced into the retort must, of course, be at a pressure not less than the pressure within the retort. The pipe through which it is introduced should be furnished with a cock for regulating the supply, and when a proper quantity is introduced and its decomposition is produced by contact with the heated contents of the retorts, I believe that its oxygen combines with a portion of the carbon evolved from the tar and other contents of the retort, thereby producing carbonic oxide in a small quantity, and its nitrogen combines with another portion of the carbon and produces a nitro-carbon gas, which is very rich in illuminating power. By the introduction of the air in a heated state, at a point where it meets the tar or other liquid, immediately on the advent of both to the retort, the vaporization of the liquid and its mixture in the vaporized state with the air, are more rapidly effected and their decomposition is rendered more speedy and perfect.

In the manufacture of gas from tar alone, or from any other carbonaceous oil or liquid, such oil or liquid may be introduced into the retort in substantially the same manner as the tar is returned to the retort illustrated in the drawing.

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

The introduction of the air into the retort in a heated state, at or close to where the tar or liquid enters, substantially as and for the purpose herein set forth.

E. D. McCracken.

Witnesses:

JOHN H. STITT,  
J. W. COOMBS.

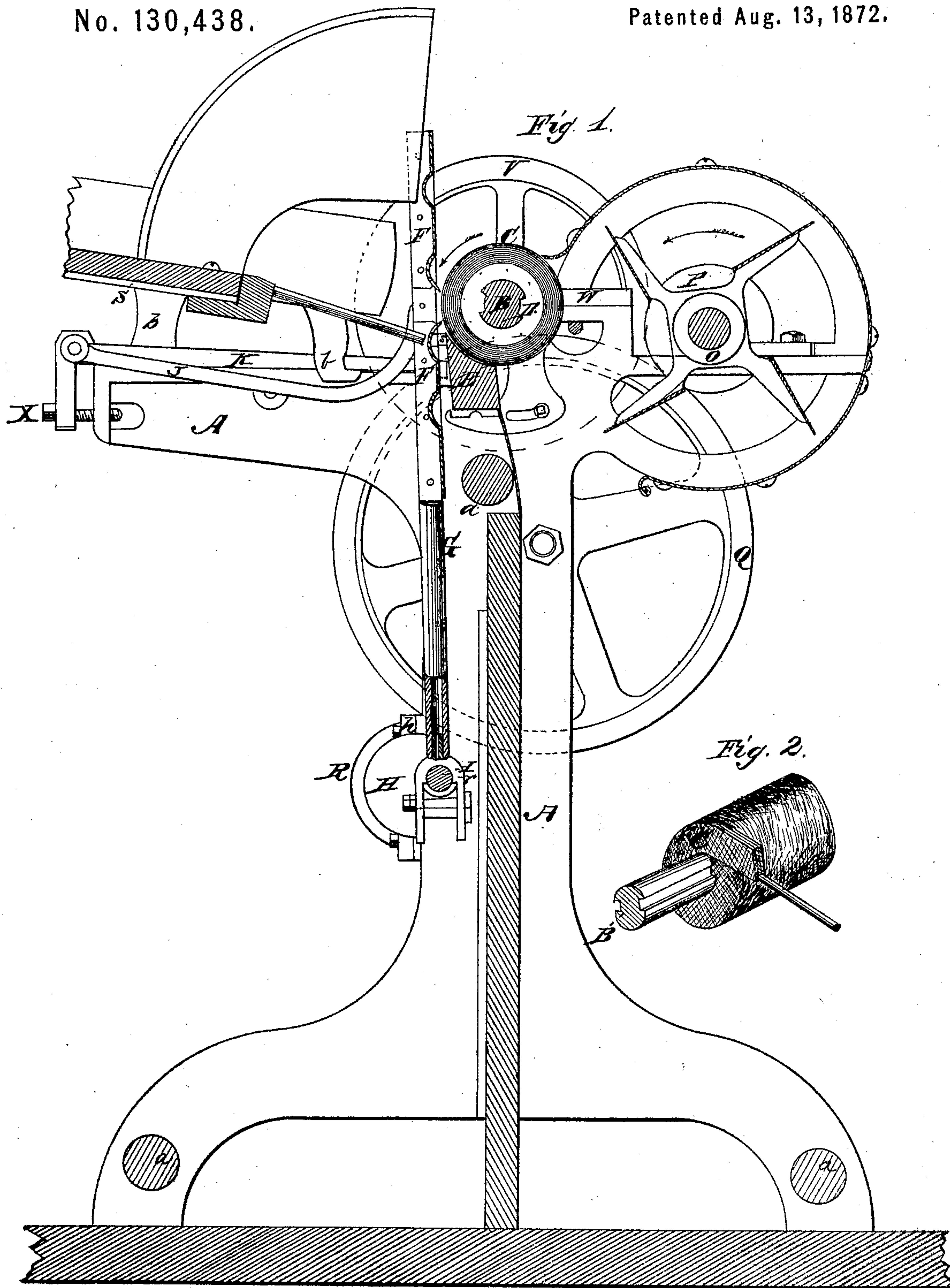


E. OSGOOD.

Improvement in Cotton-Gins.

No. 130,438.

Patented Aug. 13, 1872.



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R. S. Parks.

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