

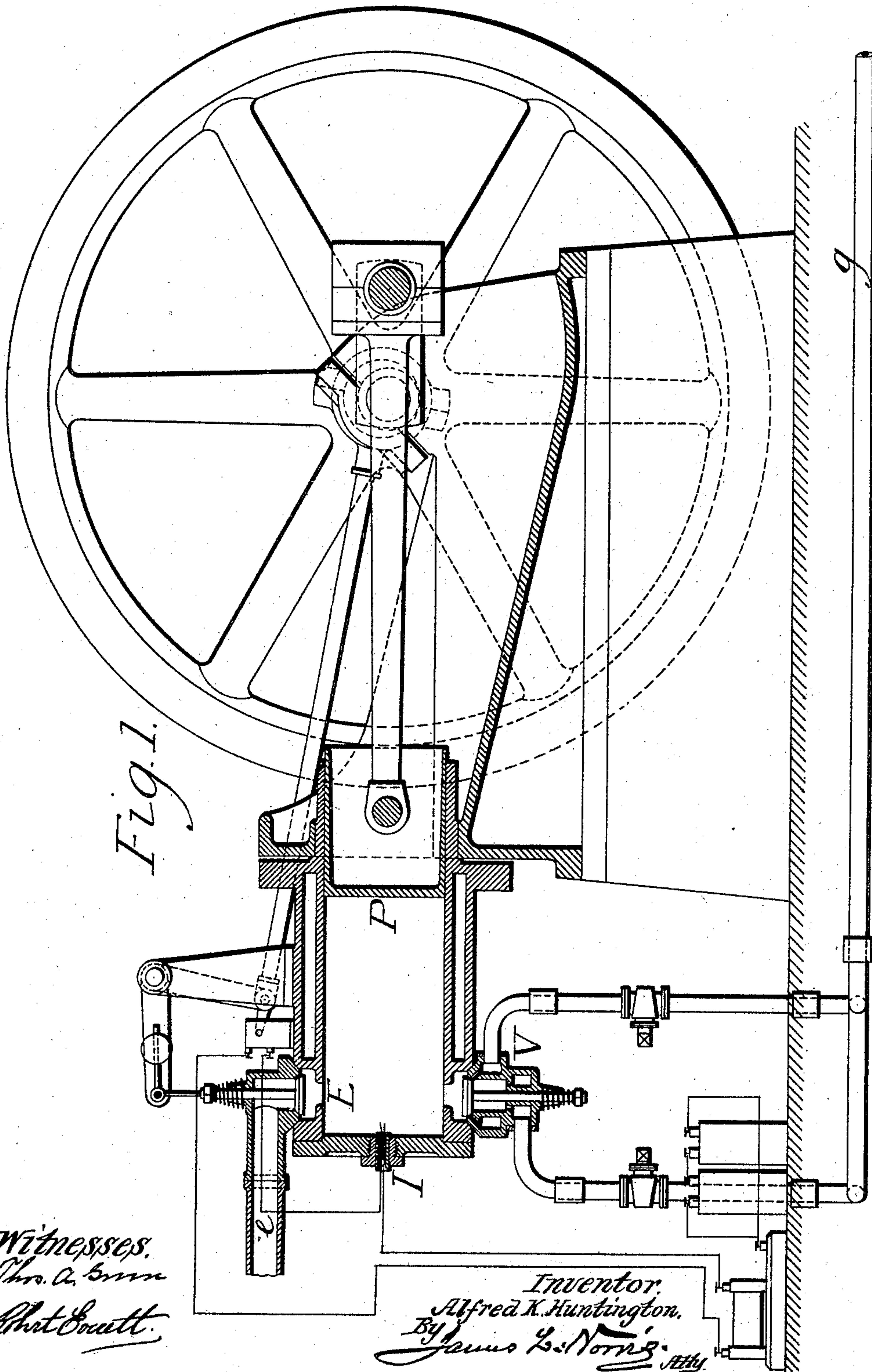
(No Model.)

2 Sheets—Sheet 1.

A. K. HUNTINGTON.  
PROCESS OF MAKING HYDROCYANIC ACID.

No. 575,240.

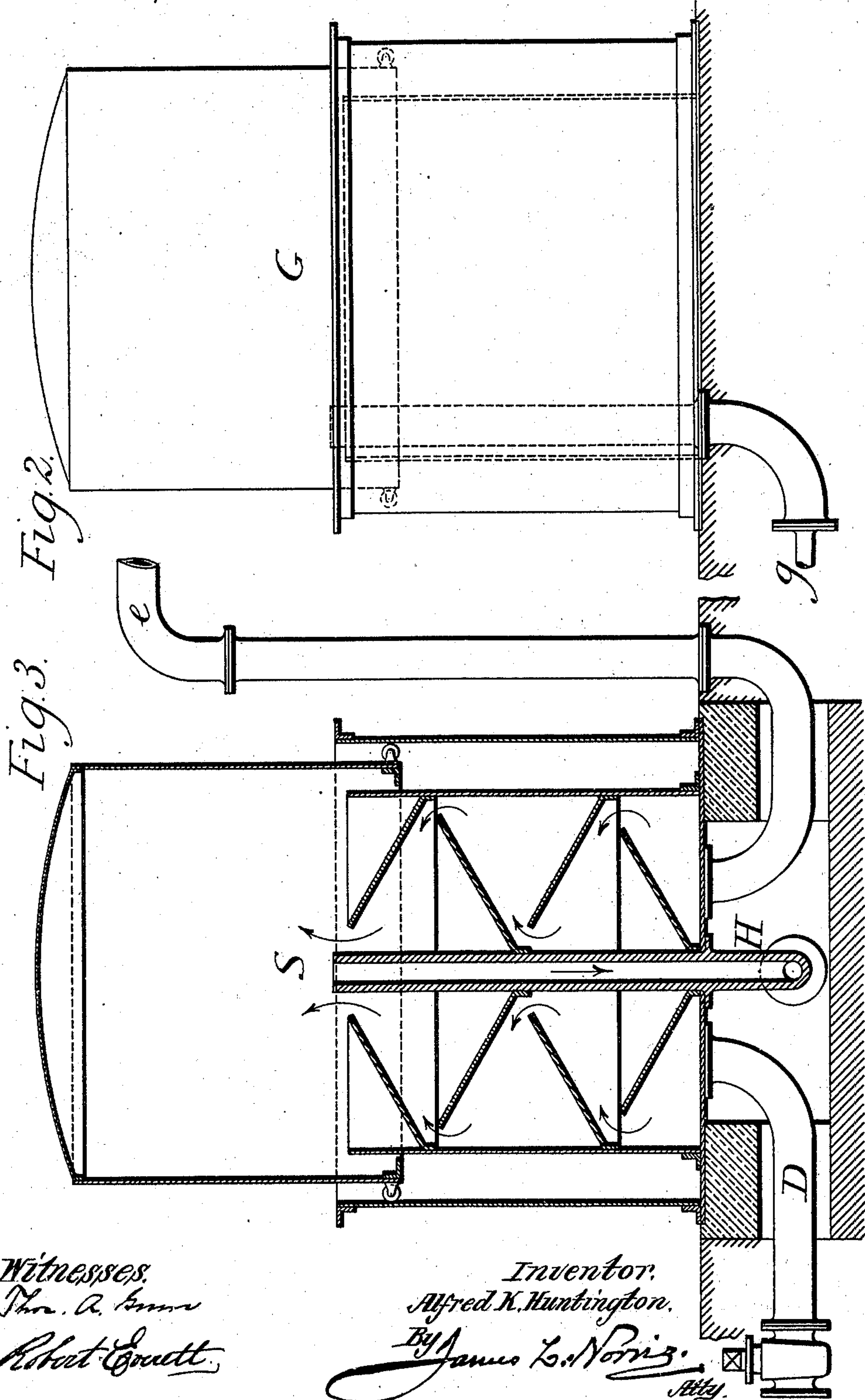
Patented Jan. 12, 1897.



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# UNITED STATES PATENT OFFICE.

ALFRED K. HUNTINGTON, OF LONDON, ENGLAND.

## PROCESS OF MAKING HYDROCYANIC ACID.

**SPECIFICATION** forming part of Letters Patent No. 575,240, dated January 12, 1897.

Application filed February 17, 1896. Serial No. 579,637. (No specimens.) Patented in England August 6, 1895, No. 14,855; in France February 5, 1896, No. 253,740; in Belgium February 5, 1896, No. 119,656; in Norway February 7, 1896, No. 4,807; in Transvaal March 10, 1896, No. 1,078, and in Cape Colony July 11, 1896, No. 1,184.

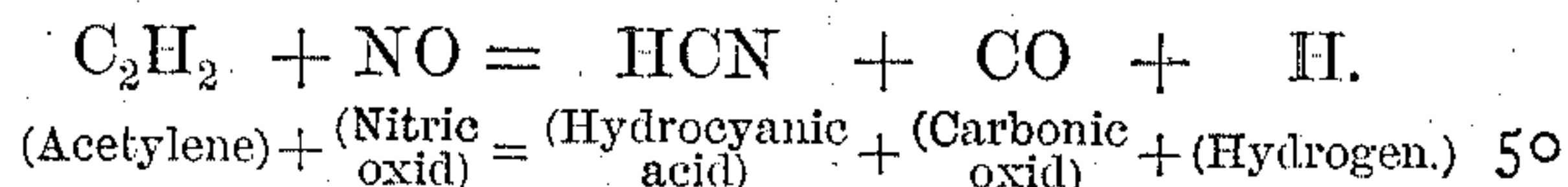
### *To all whom it may concern:*

Be it known that I, ALFRED KIRBY HUNTINGTON, a citizen of England, residing at King's College, Strand, London, England, have invented a new and useful Process for the Manufacture of Hydrocyanic Acid, (for which I have obtained Letters Patent in Great Britain, No. 14,855, dated August 6, 1895; in France, No. 253,740, dated February 5, 1896; in Belgium, No. 119,656, dated February 5, 1896; in Norway, No. 4,807, dated February 7 and August 3, 1896; in Transvaal, No. 1,078, dated March 10, 1896, and in Cape of Good Hope, No. 1,184, 6/477, dated July 11, 1896,) of which the following is a specification.

My invention relates to the manufacture of hydrocyanic acid by the rapid combustion of a mixture of acetylene and nitric oxid. As a convenient mode of effecting their mixture and combustion I draw the two gases in about equal volumes into a cylinder provided with a piston and with suction and discharge valves, as in a gas-motor engine of ordinary construction. The two gases may be drawn in separately from holders containing them, or they may be drawn in together from a receptacle in which they have been previously mingled. When the piston has made part of its outstroke, say about one-third, I ignite the mixture, preferably by an electric spark, whereby the piston is propelled to the end of its outstroke, whereupon the discharge-valve is opened, and then by the instroke of the piston I expel the products of combustion, which consist mainly of carbonic oxid, hydrogen, and hydrocyanic acid. The hydrocyanic acid being in gaseous form can be readily applied to the manufacture of cyanids by passing the products of combustion through solutions, as, for instance, of soda or potash. The carbonic oxid and hydrogen separated may be used for combustion.

The process described can be practiced with any ordinary form of gas-motor engine or with apparatus having a similar construction.

The chemical combinations resulting from the process may be expressed as follows:



The accompanying drawings illustrate a form of apparatus that may be employed in carrying out the process above set forth.

Figure 1 is an elevation, partly in section, of an engine of gas-motor kind. Figure 2 is a vertical section of one of two gas-holders, and Figure 3 is a vertical section of a separator.

There are two of the gas-holders G, such as that shown in Fig. 2, the one for supplying acetylene, the other for supplying nitric oxid. These two gases are by the partial outstroke of the piston P drawn by the pipes *g* past the valves at N into the cylinder, and when the piston has advanced a certain distance, which may be one-third of the stroke, the gaseous mixture is fired by an electrical igniter I, operated as in many known gas-motor engines. During the return stroke of the piston P the exhaust-valve E is kept open, as is usually done in gas-motor engines, and the mixed products of the combustion in the cylinder are caused to pass by the pipe *e* through an alkaline solution in the separator S, Fig. 3. The hydrocyanic acid is absorbed by the solution forming cyanid, part of which is from time to time run off by the discharge-pipe D, fresh solution being supplied while the hydrogen and carbonic oxid pass away by the pipe H.

Having thus described the nature of my invention and the best means I know for carrying the same into practice, I claim—

1. The herein-described process of manufacturing hydrocyanic acid which consists in mingling acetylene and nitric oxid, and igniting and rapidly burning the mixture, substantially as described.

2. The described process of manufacturing hydrocyanic acid, which consists in mingling

acetylene and nitric oxid, igniting and rapidly burning the mixture in a closed chamber, and expelling the products of combustion, substantially as described.

5 3. The described process of manufacturing hydrocyanic acid, which consists in mingling acetylene and nitric oxid, submitting the mixture to rapid combustion in a closed chamber, expelling the carbonic oxid, hydrogen, and hydrocyanic-acid gases produced by  
10 said combustion, and passing said products

through solutions of substances which combine with hydrocyanic acid, such as soda or potash, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 7th day of February, A. D. 1896.

ALFRED K. HUNTINGTON.

Witnesses:

OLIVER IMRAY,

JNO. P. M. MILLARD.