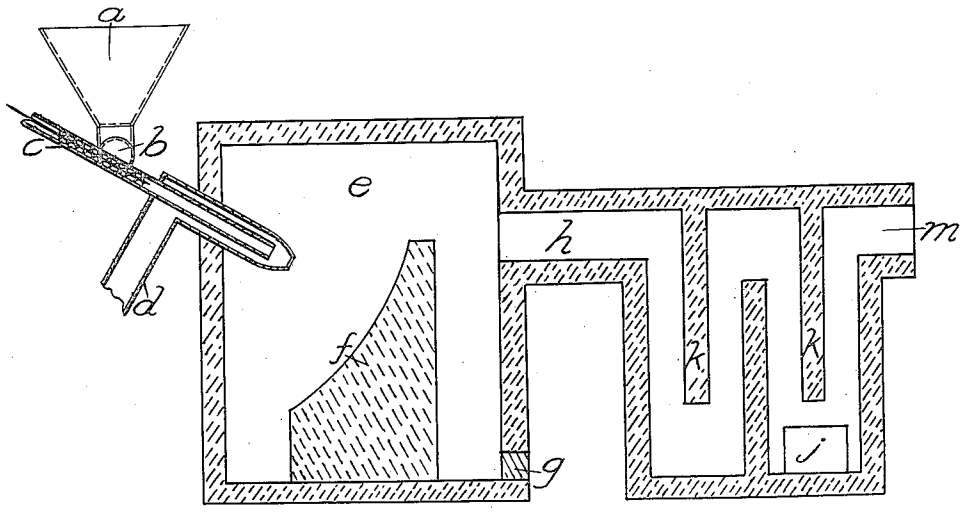
W. H. ALLEN.

PROCESS FOR MAKING PHOSPHORIC ACID.

APPLICATION FILED MAY 27, 1918.

1,285,575. Patented Nov. 26, 1918.



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PROCESS FOR MAKING PHOSPHORIC ACID.

1,285,575. Specification of Letters Patent. Patented Nov. 26, 1918.

Application filed May 27, 1918. Serial No. 236,920.

To all whom it may concern:

Be it known that I, WILLIAM H. ALLEN, a citizen of the United States, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Process for Making Phosphoric Acid, of which the following is a specification.

This invention relates to the manufacture of the oxids and acids of phosphorus by liberating phosphorus from phosphate rock by fusing this rock in the presence of carbon and silica and oxidizing the phosphorus.

This invention consists in blowing a mixture of solid phosphorus compounds, silica and carbon, preferably in the form of finely divided phosphate rock, sand and coke, into a combustion chamber by means of a blast of air which may or may not be mixed with steam as conditions shall require.

The process may be carried out in an apparatus such as is shown diagrammatically in the accompanying drawing in which *a* represents a hopper which receives the phosphate rock, sand and coke properly proportioned, and mixed. Oil or powdered coal may be substituted for the coke, in which case, the fuel may be introduced through the conduit *c*. An elbow *b* at the bottom of the hopper connects to this conduit *c* through which the mixture is fed in any desired manner. Any other means may be employed to carry the mixed fuel, silica and rock to the discharge end of the pipe *d*.

The combustion chamber *e* is built of highly refractory material and in it is mounted a block *f* of similar material against which the rock, sand and fuel is blown by the air. The mixture is substantially incandescent before it reaches the block *f* and the fused particles impinge on this block and run down its face where the completion of the desired reaction occurs which liberates oxids of phosphorus. These unite with the water in the products of combustion to form acids, which together with the products of combustion pass out through the passage *h* and below the baffles *k*, the small particles of fused slag settling at the bottoms of the cells, and the vapors passing on through the opening *m* into any suitable apparatus (not shown) for the collection of the acids.

The melted slag may be drawn from an opening normally closed by the plug *g* while the dust may be removed through an opening such as that which is normally closed by the gate *j*.

I claim:—

1. The process of making phosphoric acid consisting in conveying a mixture of fuel, phosphates and silica into a combustion chamber containing water vapor by means of a blast containing oxygen.

2. The process of projecting a blast comprising finely divided phosphates and silica, fuel and oxygen into a combustion chamber, against a slab of refractory material.

3. The process of introducing a blast of mixed air and steam bearing finely divided phosphates and silica and fuel into a combustion chamber.

WILLIAM H. ALLEN.