

[54] **AMMONIUM POLYPHOSPHATE SULFATE FERTILIZERS FROM WET-PROCESS PHOSPHORIC ACID**

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[52] U.S. Cl. **71/36; 71/40; 71/64.10**

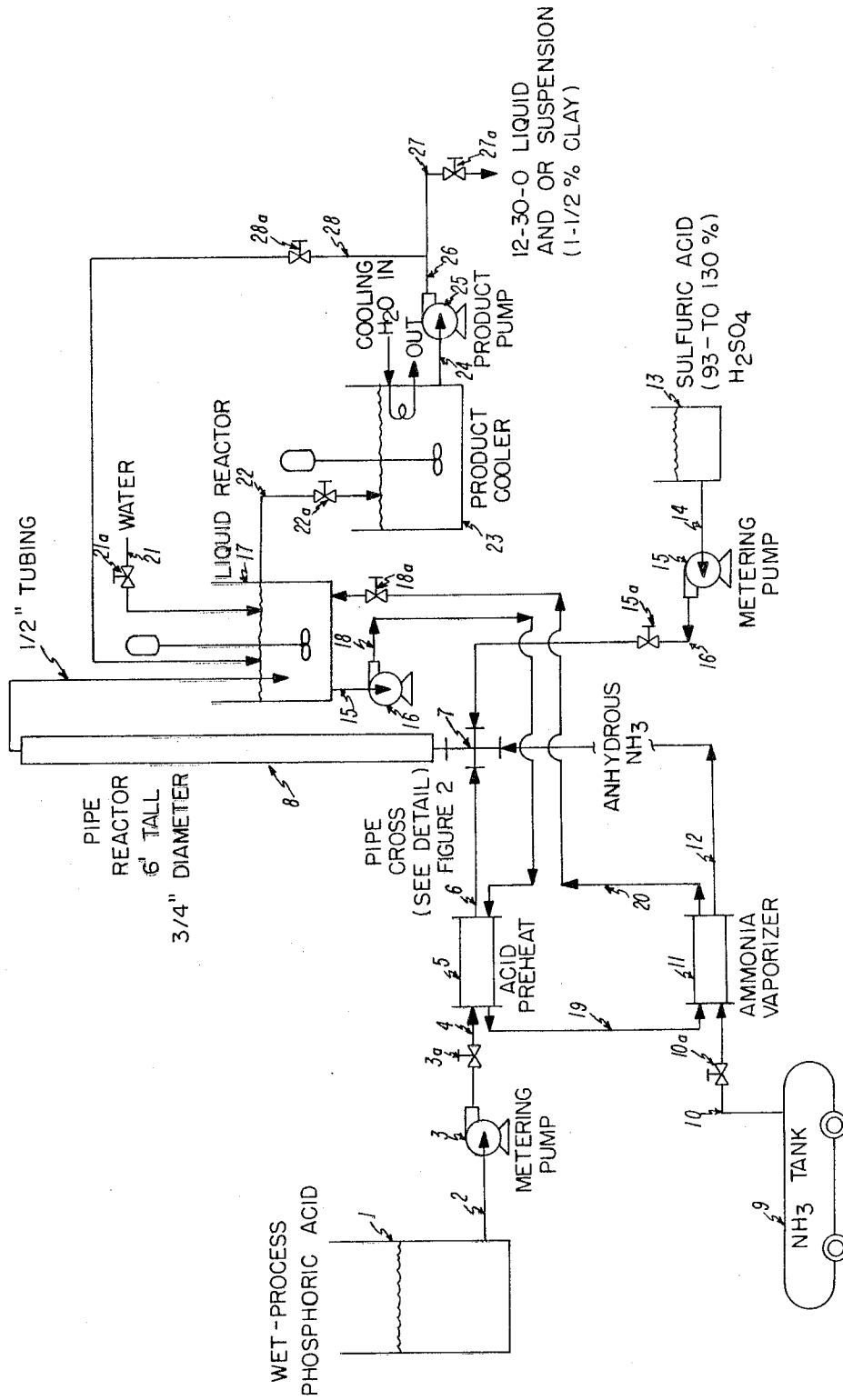
[57] **ABSTRACT**

A process for the production of fluid fertilizers (suspensions and/or solution type) made from merchant-grade phosphoric acid (50-58 percent P₂O₅), sulfuric acid, liquid anhydrous ammonia, and water, wherein liquid ammonia is heated in heat exchange means juxtaposed hot fertilizer product to form gaseous ammonia, which gaseous ammonia, along with phosphoric acid and sulfuric acid, is fed to a pipe-cross reactor wherein a melt

of ammonium polyphosphate sulfate is formed, which melt is subsequently mixed with cooled recycled product to produce a fluid fertilizer with N:P₂O₅ weight ratios ranging from about 0.3 to 1, which contains from about 10 to 60 percent of its P₂O₅ values in the form of polyphosphates and 3 to 8 percent by weight sulfur. About 45 percent of the P₂O₅ as polyphosphate is easily attainable in the product with ambient acid feed temperatures, i.e., about 50° F. to 100° F., versus prior-art teachings of only about 15 percent poly formation with preheat of the feed acids. It is a solution when it is produced, and when diluted with 10 percent by weight water, it can be stored at 40° F. without the formation of troublesome crystals. When gelling clay is added, it stores well as a suspension and remains fluid at temperatures as low as -25° F.

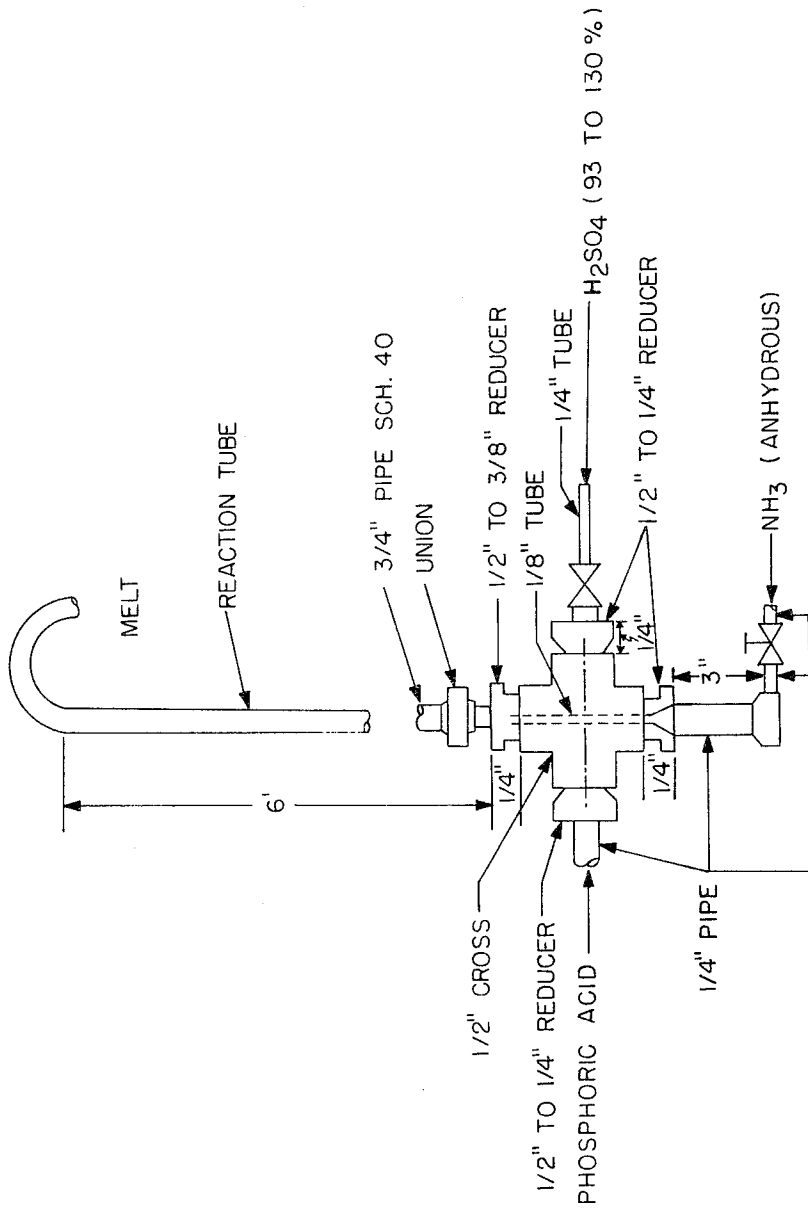
**6 Claims, 2 Sheets Drawing,
29 Pages Specification**

The file of this unexamined application may be inspected and copies thereof may be purchased (849 O.G. 1221, Apr. 9, 1968).



FLWSHEET FOR PRODUCTION OF AMMONIUM POLYHOSPHATE SULFATE FLUIDS

FIG. 1



DETAIL OF PIPE CROSS FOR JOINING PHOSPHORIC ACID, NH₃, AND H₂SO₄

FIG. 2