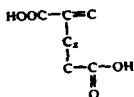


4412845

**ETHANOL OR GASOHOL FUEL  
COMPOSITION CONTAINING AS  
INHIBITOR A REACTION  
PRODUCT OF ITACONIC ACID  
AND MONO-OLEYL-1,3-  
DIAMINOPROPANE**

Benjamin J Kaufman, William M Sweeney assigned to Texaco Inc



A novel fuel composition contains ethanol or gasohol plus, as a wear-inhibiting additive, a reaction product of one mole of itaconic acid and two moles of N-mono-oleyl-1,3-diaminopropane.

4407955

**FERMENTABLE SUGAR FROM  
THE HYDROLYSIS OF STARCH  
DERIVED FROM DRY MILLED  
CEREAL GRAINS**

Werner C Muller, Franklyn Miller assigned to National Distillers and Chemical Corporation

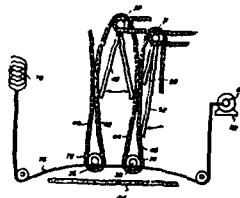
Starch derived from a dry milled cereal grain such as corn or milo is hydrolyzed to provide a sterile aqueous fermentable sugar solution which is especially adapted for fermentative conversion to ethanol with minimum thermal expenditure. Following a preliminary acid-catalyzed hydrolysis of the starch to provide a sterile hydrolysate slurry, the slurry is further hydrolyzed in the presence of added aqueous non-fermentable carbohydrate to reequilibrate the hydrolysis reaction in favor of increased production of fermentable sugar, primarily glucose. Substantially all of the water insoluble protein and oil components, and a portion of the water soluble components, e.g., sugars, proteins and vitamins,

are separately recovered from the sterile hydrolysate either before or after the further hydrolysis step with the water solubles being recycled to the system to effect reequilibration of a further quantity of hydrolysate.

4407954

**FIBER FERMENTER**

Robert A Clyde



A method and apparatus particularly useful for producing alcohols such as ethanol from sugars such as glucose. The apparatus comprises a container for holding a selected nutrient solution, a substrate comprising a multiplicity of fibers suitable for supporting a selected converting organism supported within the container and means for moving one of the substrate and the nutrient solution relative to the other at a speed slightly below that at which the organism becomes detached from the substrate while maintaining sufficient contact time between the nutrient solution and the converting organism to produce a satisfactory yield.

4401680

**BIOCONVERSION OF CEREAL  
GRAIN STRAWS TO PROTEIN-  
ENRICHED PRODUCT**

Murray M Young, Waterloo, Canada assigned to University of Waterloo

Cereal grain straws are converted into protein-enriched products having significant amounts of microbial biomass in the form of the fungus, *Chaetomium cellulolyticum*.