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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020
Open Book – Through Blackboard Learning Management System

Course: Patent Drafting & Specification Writing **Semester: X**
Programme: B.TECH.(ET), LL.B. (Hons.) IPR

Time: 03 hrs. **Max. Marks: 100**

Instructions:
As this examination is non-proctored, the students are expected to demonstrate a very high degree of Academic Integrity and not copy contents from resources referred. Instructors would look for understanding of the concept by the students and any similarity found from resources online/ offline shall be penalized in terms of deduction of marks and even cancellation of paper in requisite cases. The online examination committee of the School would also look for similarity of two answer scripts and if answer scripts of two or more students are found similar, both the answer scripts shall be treated as copied and lead to cancellation of the paper. In view of the aforesaid points, the students are warned that they should desist from any unfair means and provide answers in their own words.

All Questions are Compulsory
Answer each question in not more than 500 words

S. No.		Marks	CO
1	For the specification given below: 1. Draft at least 3 claims. 2. Draft an abstract (maximum of 150 words) and 3. Provide an appropriate title The invention generally relates to a device for cutting or cracking open nuts or hand fruits of variable size. The invention particularly relates to a device for cutting open coconuts of various shapes and sizes for domestic use and use in temples and in small-scale industries. Coconut find extensive use in domestic and industrial applications in various forms such as coconut shavings, coconut water, coconut milk , coconut oil, desiccated coconut, coir etc. coconut is also used in foods, cosmetics, personal care products, nutraceuticals, etc. In many countries, coconuts falling from trees are wasted due to high coat involved in plucking and breaking coconuts. Breaking of coconuts is usually	**20**	**CO4**

done manually. Holding a coconut in one hand and using a heavy metallic object in the other hand to break the coconut tends to damage the nerves and muscles of the operator over a period of time.

A need therefore exist for a device that can be used in homes, temples, hotels, and restaurants. It should be simple, easy to operate and flexible enough to cater to different sizes and types of coconuts, with the capability of being automated.

Description:

As illustrated in figure 1, the coconut breaking device has a vertical stand (1) having grooves and notches (4), a coconut holder (2) having an adjustable knob (3) and a receptacle/container (50 placed over a base (6). The vertical stand (1) is connected to the base (6) at its one end and is connected to a rod, which has a fulcrum at the point where the said rod is connected to the vertical stand (1). This rod has a sharp edge laminar blade/knife (7) at its one end and a handle (8) at its other end. The base (6) can be mounted or attached rigidly to any flat surface for operation. The grooves and notches (4) on the vertical stand (1) allow appropriate vertical positioning of the coconut holder (2). The receptacle (5) is provided at the base (6) to collect coconut water. The prong like structure of the coconut holder (2) allows the coconut to be grasped firmly and thereby minimizes the risk of accidental slippage.

A coconut is held in between the prongs of the coconut holder (2). Vertical position of the coconut holder (2) is adjusted suitably. An operator moves the handle (8) in the upward direction causing the knife (7) to come into contact with the coconut, placed in the coconut holder (2) thereby slicing the coconut into two pieces. The motion can be as the situation demands, i.e. depending on the outside crust of the coconut. The coconut water is collected in the receptacle (5). The handle (8) is made of material that prevents injury to the hand of the operator e.g. leather, cloth etc.

In an embodiment of the invention, the process can be automated by using electrically operated parts. Any such embodiments will fall within the scope of this invention.

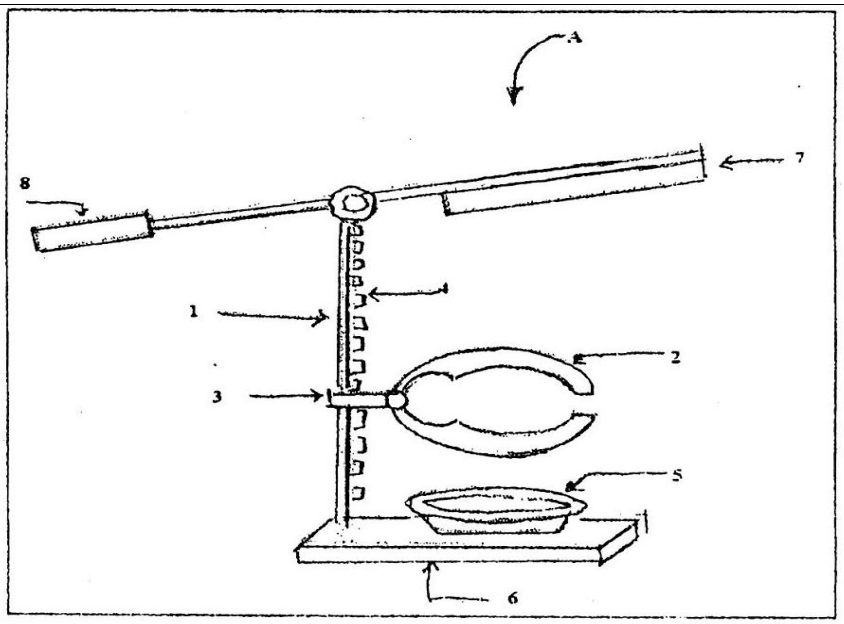

Fig . 1

Ans.

2 For the specification given below:

1. Draft at least 3 claims.
2. Draft an abstract (maximum of 150 words) and
3. Provide an appropriate title

The invention in general relates to substances for removing dirt form leather and/or for colouring the leather. In particular, the invention relates to a shoe polish.

The object of the invention is to provide a shoe polish which may be readily and easily applied to ordinary leather shoes to colour them with any desired tint, `or to match or harmonize them with the costume of the wearer. A further object of the invention is to provide a shoe polish as mentioned which will not be deleterious to the leather but which on the contrary will serve to keep the leather soft and pliable. Other objects will appear herein after.

20 **CO2**

In carrying out the invention, preferably the shoe polish (or dressing) is applied to the leather in the seven positive colours namely: yellow, red, blue, green, brown, black, and white. The user can also compound the desired units there from as needed without departing from the scope of the invention.

The composition of shoe polish is as follows:-

Powdered coloring matter	4 parts by weight
Water, containing a small quantity of salt, sodium carbonate and an egg.	8 parts by weight
Lard oil	1 part by weight
Syrup (corn or cane mixture of both)	4 parts by weight

	Mucilage formed of gum arabic and water | 8 parts by weight 4 parts by weight of powdered colouring matter is ground well into 8 parts of a first mixture of salt, sodium carbonate and a well-beaten raw egg in 1 litre of warm water to form a second mixture. About 60 grams of salt, 15 grams of sodium carbonate and 60 grams of beaten egg will usually be sufficient. The colouring matter is preferably chrome yellow, chrome red, chrome green, ultramarine blue, burnt umber, bone black, and zinc white. To twelve parts of the said second mixture thus formed added 1 part of lard oil with stirring after which are added four parts of syrup and eight parts of mucilage. The syrup used is preferably ninety percent corn syrup and ten per cent cane syrup, although ether may be used separately or in different proportions, and the mucilage is formed by dissolving 500 grams of gum arabic in 2.5 litres of water resulting in the final composition, which is allowed to stand for one week after which it is ready for use. Egg is added to the water for the colour and it also helps to keep the leather soft and adds lustre to the polish. The salt preserves the egg and sodium carbonate neutralizes the acids in the colour. The lard oil preserves the leather and keeps it soft and pliable and also prevents the polish from cracking. The syrup and mucilage are added for adhesive and to give lustre to the polish. In using the polish (or dressing) two or more of the colours may be mixed together to form a dressing of the desired tint. Usually two applications of the dressing will give an even colour although sometimes three or more may be preferred. Unless the dressing has remained upon the leather for a great length of time it may be readily washed off to be replaced by another tint.		
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3	After reading the below specification carefully, please: i. Draft at least 3 claims; ii. Provide an appropriate title to the specification iii. Draft a suitable abstract **Field of the invention** This invention relates to liquid detergent compositions. In particular, it relates to aqueous detergent compositions suitable for use as general purpose household cleaning compositions. **Background of the invention:** General purpose household cleaning compositions for hard surfaces such as metal, glass, ceramic, plastic and linoleum surfaces are commercially available in both powdered and liquid form. Powdered cleaning compositions consist mainly of builder or buffering salts such as phosphates, carbonates, silicates etc., and although such	**20**	**CO2**

compositions may display good inorganic soil removal, they are generally deficient in cleaning ability on organic soils such as the grease/fatty/oily soils typically found in the domestic environment.

Liquid cleaning compositions, on the other hand, have the great advantage that they can be applied to hard surfaces in heat or concentrated form so that a relatively high level of surfactant material is delivered directly to the soil. Moreover, it is a rather more straight forward task to incorporate high concentrations of anionic or non ionic surfactant in a liquid rather than a granular composition. For both these reasons, therefore, liquid cleaning compositions have the potential to provide superior grease and oily soil removal over powdered cleaning compositions.

Summary

The present invention provides liquid detergent compositions which are stable homogeneous fluent liquids having excellent suds control across the range of usage and water hardness conditions and which provide excellent shine performance together with improved cleaning characteristics both on greasy/oily soils and on inorganic particulate soils with little tendency to cause filming or streaking on washed surfaces.

According to the present invention there is provided an aqueous liquid detergent composition characterized by:

a) from about 1% to about 20% of a synthetic anionic, non ionic, amphoteric or zwitterionic surfactant or mixture thereof,

b) from about 0.5% to about 10% of a mono-or sesquiterpene or mixture thereof, the weight ratio of surfactant:terpene lying in the range of 5:1 to 1:3 and

c) from about 0.5 to about 10% of a polar solvent having a solubility in water at 25° C. in the range from about 0.2% to about 10%.

Detailed description

Preferred terpenes are mono- and bicyclic monoterpenes, especially those of the hydrocarbon class, which can be selected from terpinenes, terpinolenes, limonenes and pinenes. Highly preferred materials of this type include d-limonene, dipentene, α-pinene, β-pinene and the mixture of terpene hydrocarbons obtained from the essence of oranges (eg. cold-pressed orange terpenes and orange terpene oil phase ex fruit juice). Terpene alcohols, aldehydes and ketones can also be used, however, the alcohols, in particular, providing valuable but unexpected improvements in viscosity regulation when incorporated in the compositions of the invention at a level, preferably, of from about 1% to about 3%, more preferably from about 1.5% to about 2.5%. The terpene is used in combination with a polar solvent (i.e. containing at least one hydrophilic group) having a solubility in water of from about 0.2% to about 10% by weight (g/100 g solution), preferably from about 0.5% to about 6% by weight, for example benzyl alcohol. The compositions of the invention also preferably contain from about 0.005% to about 2%, more preferably from about 0.05% to about 0.7% of an alkali metal, ammonium or alkanolammonium soap of a C 13 -C 24 , especially C 13 -C 18 , fatty acid. Preferably, the fatty acid is fully saturated, for example, by hydrogenation of naturally occurring fatty acids. Addition of the soap, particularly to

	compositions containing terpene hydrocarbons, is found to provide significant synergistic enhancement in the suds-suppression effectiveness of the system. A calcium sequestrant is also desirable in the present compositions, providing not only cleaning advantages on particulate soil, but also, surprisingly, advantages in terms of product homogeneity and stability. The sequestrant component is a water-soluble inorganic or organic polyanionic sequestrant having a calcium ion stability constant at 25° C. of at least about 2.0, preferably at least. about 3.0, the weight ratio of surfactant:sequestrant preferably lying in the range from about 5:1 to about 1:3, especially about 3:1 to about 1:1. In preferred embodiments the sequestrant has an anion valence of at least 3 and is incorporated at a level of from about 0.5% to about 13% by weight. The composition itself preferably has a pH in 1% aqueous solution of at least about 8.0. Suitably, the sequestrant can be selected from the water-soluble salts of polyphosphates, polycarboxylates, aminopolycarboxylates, polyphosphonates and amino polyphosphonates and added at a level in the range from 1% to 9%, especially 2 to 8%, more especially 3 to 7% by weight of the composition. Adjustment of the sequestrant level and surfactant:sequestrant ratio within the above specified ranges is important for providing composition of optimum stability. A notable feature of the instant compositions is the suds-suppression effectiveness of the terpenes in liquid compositions based on ampholytic or zwitterionic surfactants. Thus, it is notoriously difficult to control the sudsing behaviour of these surfactants in a cost-effective manner using conventional suppression agents such as soaps, waxes etc. The terpenes are thus particularly valuable in this respect.		
Ans.			
4	After reading the below specification carefully, please: i. Draft at least 3 claims; ii. Provide an appropriate title to the specification iii. Draft a suitable abstract A client meets you and provides you with information below. Please use the said information to write a complete patent specification ready to be filed before the Indian Patent Office. The invention relates to a process for converting 1-phenylethanol into styrene, which process involves: (1) contacting a feed containing 1-phenylethanol, organic acid and 2-phenylethanol with a catalyst to obtain a product containing styrene, and (2) removing ester compounds based on 2-phenylethanol and organic acid from the product of step (1), in which process the feed of step (1) has a molar ratio of organic acid to 2-phenylethanol of at least 1:10.	**20**	**CO3**

Description

The present invention relates to a process in which feed comprising 1-phenylethanol (also known as α-phenylethanol or methyl phenyl carbinol) is contacted with catalyst. A commonly known process comprises the manufacture of styrene and propylene oxide starting from ethylbenzene and propene. In general such process involves the steps of (i) reacting ethylbenzene with oxygen or air to form ethylbenzene hydroperoxide, (ii) reacting the ethylbenzene hydroperoxide thus obtained with propene in the presence of an epoxidation catalyst to yield propylene oxide and 1-phenylethanol, and (iii) converting the 1-phenylethanol into styrene by dehydration using a suitable dehydration catalyst.

A problem of 2-phenylethanol is that it is less easily converted into styrene while it cannot easily be separated from 1-phenylethanol by distillation. This means that 2-phenylethanol tends to build up in the dehydration unit.

It has now been found that 2-phenylethanol can be removed in a simple and effective way. It was found that 2-phenylethanol reacts more readily than 1-phenylethanol with organic acids such as benzoic acid in the dehydration unit. Organic acids can be added to the reaction mixture comprising 1-phenylethanol and 2-phenylethanol. However, generally organic acids are produced in the preparation of ethylbenzene hydroperoxide and/or propylene oxide. Therefore, the propylene oxide manufacturing process can be simplified in a further aspect in that organic acids do not need to be removed or need to be removed to a lesser extent in the process preceding the dehydration unit.

Therefore, the present invention now relates to a process for converting 1-phenylethanol into styrene, which process comprises:

(1) contacting a feed comprising 1-phenylethanol, organic acid and 2-phenylethanol with a catalyst to obtain a product comprising styrene, and

(2) removing ester compounds based on 2-phenylethanol and organic acid from the product of step (1),

in which process the feed of step (1) has a molar ratio of organic acid to 2-phenylethanol of at least 1:10.

In the present invention, ethylbenzene, 1-phenyl-ethanol, 2-phenylethanol and styrene can contain substituents. The substituents zeal be either on the phenyl ring or on the ethyl or ethanol or ethylene chain. Most specifically, the compounds are unsubstituted ethylbenzene, 1-phenylethanol, 2-phenylethanol and styrene.

The feed comprising 1-phenylethanol, organic acid and 2-phenylethanol for use in the present process will generally have been obtained by a process comprising:

(b) oxidation of ethylbenzene to obtain a reaction product containing ethylbenzene hydroperoxide

(c) optionally washing the reaction product of step (a),

(d) reacting at least part of the reaction product containing ethylbenzene hydroperoxide with propene to yield propylene oxide and aryl alcohol, and

(e) removing propylene oxide from the product obtained in step (c).

	The product of step (d) can suitably be used as feed for step (1) of the process according to the present invention.		
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5	After reading the below specification carefully, please: i. Draft at least 3 claims; ii. Provide an appropriate title to the specification iii. Draft a suitable abstract The invention is generally related to the field of formulation and use of fertilizer compositions for agricultural use. More specifically, the invention relates to fertilizer compositions that contain viable Bacillus bacteria and decontaminated animal manure. It is well understood that nitrogen (N), the single most important plant nutrient, has been over used in modern agriculture in an effort to encourage maximum plant yields. Nitrogen in the form of soluble nitrates is particularly harmful to the environment since nitrates readily leach out of soil and cause pollution of ground and surface waters. One of the principal goals of agricultural science has been to invent a perfect fertilizer composition that is capable of optimizing food plant production when used at minimum application rates and that, subsequently, will not degrade or adversely affect the soil ecosystem. The present invention attains this goal. Prior art X, claims a biochemical fertilizer but no mention is made of using decontaminated manure as a source of the organic ingredients. Other non-manure organics are indicated. A broad list of microorganisms, listed by genera, is claimed in claim 10, which includes Bacillus, but this claim simply lists all the genera that may contain beneficial microorganisms, not novel as they are listed as such in numerous textbooks, and does not give any specific examples of species with performance data. The need for microbial nutrients is mentioned in claim 14 but these must be part of the microorganism ingredient, not the bulk organic ingredient as in my invention (where decontaminated manure feeds the Bacillus). There is a great but heretofore unmet need Worldwide for technology that permits lower use rates of N while maintaining plant yields. The present invention provides such technology by combining unique ingredients and processing them in such a way as to arrive at potentiated fertilizer compositions capable of effecting substantial benefits in plant production, The novelty of the present invention relates to specific synergisms between the various ingredients and to the processing technology that renders such ingredients functional. In accordance with the present invention, fertilizer compositions that contain viable Bacillus bacteria and decontaminated animal manure are presented. Optionally, these formulations preferably also contain humic acid and N-P-K substances, where N means nitrogenous or nitrogen-containing compounds (organic or inorganic), P indicates phosphorous-containing (organic or inorganic compounds), and K indicates potassium-containing (organic or inorganic compounds),	**20**	**CO1**

	More specifically, the invention concerns compositions comprising at least one species of probiotic Bacillus bacteria that exert a positive effect on the yield of agricultural plantsand/or reduce the nitrogen requirements of agricultural plants, and animal manure that has been decontaminated to reduce the concentration of undesirable microorganisms. Thus, a first aspect of the invention is a fertilizer composition for plant production comprised of decontaminated manure and Bacillus spores, and preferably humic acid and, optionally, one or more of N compounds, P compounds, Kcompounds, and combinations of two or more of these compounds (for example two N compounds, an N compound with a P compound, two Kcompounds, or one each of N compound, P compound, and K compound). Preferred compositions are those wherein theingredients are blended into an admixture resulting in a granular product. Other preferred compositions are those blended into an admixture resulting in a powdered product. Preferably, the ingredients are formed into hardened pellets. The decontaminated manure is preferably derived from manure selected from the group consisting chicken or swine manure, particularly produced without litter or bedding, and produced from animals not receiving growth-promoting antibiotics in their feed. Other preferred compositions of the invention are those wherein the Bacillus spores are from strains of probiotic Bacillus bacteria capable of enhancing beneficial microbial populations within the rhizosphere. Preferably, the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (100 to 10,000 times) compared to raw manure. Yet other preferred compositions of the invention are those wherein the humic acid is derived from lignite. As used herein, "humic acid" means a polymeric compound typically containing the brownish-black pigment melanin, and can be obtained from lignite. It is soluble in bases, but insoluble in mineral acids and alcohols. It is not a well-defined compound, but a mixture of polymers containing aromatic and heterocyclic strictures, carboxyl groups, and nitrogen, and is used in drilling fluids, printing inks, and plant growth. See Hawley's Condensed Chemical Dictionary, 12th Edition, (1 993), page 608. As seen in the examples herein, not all humic acids behave in similar fashion. Still other preferred compositions of the invention are those wherein the N compounds are selected from the group consisting of urea, ammonium sulfate, ammonium nitrate, ammonium phosphate, calcium nitrate, potassium nitrate, sodium nitrate; the P compounds are selected from the group consisting of ammonium phosphate, superphosphate, Ca(H2P04)2, tricalcium phosphate, phosphate salts of sodium or potassium, including orthophosphate salts; and the Kcompounds are selected from the group consisting of KCI, potassium sulfate, potassium nitrate, and phosphate salts of potassium, including orthophosphate salts. Preferred compositions of the invention are those wherein the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (lOa to 10,000 times) compared to raw manure. Still other preferred compositions of the invention		

	are those wherein the N compounds are selected from the group consisting of urea, ammonium sulfate, ammonium nitrate, ammonium phosphate, calcium nitrate, potassium nitrate, sodium nitrate; the P compounds are selected from the group consisting of ammonium phosphate, superphosphate, Ca(H2P04)2, tricalcium phosphate, phosphate salts of sodium or potassium, including orthophosphate salts; and the Kcompounds are selected from the group consisting of Kel, potassium sulfate, potassium nitrate, and phosphate salts of potassium, including orthophosphate salts. Decontaminated manures are prepared by methods known in US patent. The fertilizer is prepared by mixing decontaminated manures and other ingredients as discussed above and a suitable amount Bacillus spores. Preferred compositions of the invention are those wherein the decontaminated manure has a total aerobic/facultative viable plate count reduced by 2-4 logs (100 to 10,000 times) compared to raw manure.		
Ans.			

I, ……., understand that submitting work that isn't my own may result in failure in this paper and I may also be subject to Disciplinary Proceedings as per the Academic Integrity policy of the University