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Section 29

AUSTRALIA
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PATENT REQUEST : STANDARD PATENT

I/We, being the person(s) identified below as the Applicant(s), request the grant of a Standard Patent to the person(s) identified below as the Nominated Person(s), for an invention described in the accompanying complete specification.

Applicant(s) and Nominated Person(s): Puwakdandawe Narayana NANDADASA

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Invention Title: PACKAGING MATERIAL & PROCESS FOR PREPARING THE SAME

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BASIC CONVENTION APPLICATION DETAILS

Application No:	Country:	Application Date:
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Puwakdandawe Narayana NANDADASA

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Patent Attorney for and
on behalf of the Applicant

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NOTICE OF ENTITLEMENT

I/We Puwakdandawe Narayana NANDADASA

of 127, JAMBUGASMULLA MAWATHA
NUGEGODA
SRI LANKA

being the applicant(s) in respect of an application for a patent for an invention entitled PACKAGING MATERIAL & PROCESS FOR PREPARING THE SAME, state the following:

1. The nominated person(s) has/have, for the following reasons, gained entitlement from the actual inventor(s):

   THE NOMINATED PERSON IS THE ACTUAL INVENTOR.

2. The nominated person(s) has/have, for the following reasons, gained entitlement from the basic applicant(s) listed on the patent request:

   THE APPLICANT AND NOMINATED PERSON IS THE BASIC APPLICANT.

3. The basic application(s) listed on the request form is/are the first application(s) made in a Convention country in respect of the invention.

DATE: 10 November 1993

Puwakdandawe Narayana NANDADASA

GRIFFITH HACK & CO.

Patent Attorney for and
on behalf of the applicant(s)

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(56) Prior Art Documents
GB 2137609
GB 179055
GB 399277

(57) Claim

1. A packaging material suitable for packing around an article or articles, said packaging material comprising coir dust and a resilient bonding agent transformed either:

(a) to conform to the shape and dimensions of said article or articles or,

(b) into the form of pellets or granules suitable for use as fillers around said article or articles,

wherein, after use, said packaging material is capable of being re-used as organic matter in horticultural processes.

8. A process for preparing a packaging material suitable for packing around an article or articles as claimed in any one of the preceding claims, which comprises

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combining a raw material comprising coir dust and a resilient bonding agent, and transforming the mixture either:

(a) to conform to the shape and dimensions of said article or articles, or

(b) into the form of pellets or granules suitable for use as fillers around said article or articles.

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COMPLETE SPECIFICATION

STANDARD PATENT

Applicant(s):

Puwakdandawe Narayana NANDADASA

Invention Title:

PACKAGING MATERIAL & PROCESS FOR PREPARING THE SAME

The following statement is a full description of this invention, including the best method of performing it known to me/us:

The present invention relates to a packaging material, and a process for preparing the same, and, in particular, the invention is aimed at meeting the basic "green packaging" concepts of re-use, re-cycling and reduction, these being the current theme of the environmentally conscious world of packaging.

Packaging materials, conventionally used, for packaging of various articles/products, and, in particular, in the course of transportation of articles/products from one place to other,-are not capable of being re-used,and, consequently, the discarded packaging materials are estimated to cover one third of the wastes, universally.

The main object of the present invention lies in use of such raw material, suitably processed, which can be re-used for diverse applications, and specifically for maintaining environmental and ecological balance. The object of the invention being as stated above, the packaging material made of the aforementioned raw material, duly processed, as will be described hereinafter, is capable of being used not only as marketing promotional medium for various products, but this can also be used as, e.g., a planting medium in countries where there is campaign for green conversion, that discourages use of non-bio-degradable and hazardous packing materials and destruction of forest cover of the world for resources to make paper and packing material.

~~With the above objects in view, the present invention~~

According to a first aspect of the present invention there is provided a packaging material suitable for packing around an article or articles, said packaging material comprising coir dust and a resilient bonding agent transformed either:

(a) to conform to the shape and dimensions of said article or articles or,

(b) into the form of pellets or granules suitable for use as fillers around said article or articles,

wherein, after use, said packaging material is capable of being re-used as organic matter in horticultural processes.

According to a second aspect of the present invention there is provided a process for preparing a packaging material suitable for packing around an article or articles which comprises combining a raw material comprising coir dust and a resilient bonding agent, and transforming the mixture either:

(a) to conform to the shape and dimensions of said article or articles, or

(b) into the form of pellets or granules suitable for use as fillers around said article or articles.

The coir dust is selected, according to the invention, as the raw material, keeping in view that it has the inherent property of absorbing 1000% of its own weight in water. Other agro-waste(s), such as hereinafter described, having similar property, and in its particulate form, is (are) also selected as the raw material, if necessary, along with the coir dust, for preparing the packaging material according to the invention.

For the preparation of the packaging material out of the aforementioned raw material, some bonding agent such as herein described is bonded with the raw material. Resilence of the packaging material, as prepared, for the purpose of absorbing extraneous shocks/loads with a view to protect the articles/products packaged with the packaging material, is controlled by such bonding agent. Thus, the combination of the raw material and the bonding agent provides a synergistic effect, so that the end product, being the packaging

material, not only saves the packaged products/articles, but it also protects the products/articles by absorbing shock loads in transit, and as also absorbs liquid spilage/leaking, if there be any, out of the packaged products/articles, during transit.

The bonding material used ensures resilience and provides full contact with the packaging since it is moulded to the shape of the product and ensures safety of the material packed. Since this is a biodegradable material, the packing can be re-utilized as a planting medium instead of peat which is banned in certain countries due to environmental and ecological reasons.

Preferably, the bonding agent is latex of natural/ artificial rubber, or mixture of bio-degradable natural products. The bonding agent may have added thereto upto 5% by weight of synthetic bonding material(s).

As preferred embodiment, agro-waste(s) is(are) selected from agricultural/forestry residues, like sawdust, wood chips, bark, wood waste, charcoal, peat, shells, olive residues, coffee hulls, coconut fibre, sunflower husks, cottonseed husks, hazelnut shells, bagasse, hemp, straw, flax, plant stalks, paper waste, malt sprouts, rice husks and the like.

In a particular embodiment, the raw material of the packaging material according to the invention, constituted by

coir dust and/or agro-waste(s), has added thereto fertilizer(s), such that the packaging material, after its use, is capable of being re-used for plant growth medium. The package of fertilised or unfertilized coir dust may be packed with planting medium, seeds or cuttings and transported, as such, for sale, or in planting campaigns. Once the primary function of the package material is over, the carcass is crushed and used as a medium for plant growth. This would be a different use or application or an extension of the primary use. So far no body has used a packaging product disintegrate for plant growth. This is a novel concept.

If desired, the outer surface of the packaging material may be given the shape of standard flower pots or those as required by plant growers, such that it is capable of being re-used as planting medium or moisture retaining material.

The current trend in utilising agricultural and forest waste(s) as well as weeds for gainful purposes is hampered by cost of transport from the scattered sources to the conversion sites.

These materials can be converted as packaging material according to this invention, and the transport expenses can be minimised by absorbing part of it to packaging. The packaging materia' according to the invention has an intrinsic value, and the end user can utilise the disposable packaging material for growing, heating and enriching the soil, and for many other multipurpose usage. Thus, packaging

will be a media by which such materials could be gainfully utilized at minimum cost.

~~The invention also provides a process for preparing the~~ packaging material, as described hereinbefore, which comprises bonding coir dust and/or agro-waste(s), such as herein described, in particulate form, constituting the raw material, with resilient bonding agent(s), such as herein described, and transforming the same in the manner, such as herein described, either in the shape(s) and dimension(s) of article(s) to be packaged, or in the form of pellets/granules for being used as fillers around the article(s) to be ~~packaged.~~

Preferably, the raw material is kept dissolved in a liquid solution of the bonding agent(s) till the raw material is bonded with the bonding agent(s), the raw material being fumigated prior to being dissolved in the solution of the bonding agent. The solution of the bonding agent(s) is preferably maintained at a temperature ranging from ambient to 120°C, depending on the raw material(s) and/or the bonding agent(s) used. More preferably, the solution of the bonding agent(s) is made in a bio-degradable liquid medium.

The fumigation of the raw material may be effected either by heating or by chemical vapour treatment, for more than 4 hours.

In one preferred embodiment, the raw material, so bonded with the bonding agent(s), is moulded to provide internal

shape(s) and dimension(s), as desired, corresponding to outer shape(s) and dimension(s) of the article(s) to be packaged. The moulding may be done by applying pressure and vacuum. Preferably the pressure is maintained in the range of 20kPa to 13700 kPa ~~2lbs/sq.inch — 2000lbs/sq.inch~~.

In an alternative embodiment, the raw material, so bonded with the bonding agent(s), is centrifuged to form pellets/granules of desired shape(s) and size(s), for being used as fillers around the articles to be packaged. In this case, the bonding of the raw material with the bonding agent(s) is effected by coagulation, the raw material being fumigated prior to said coagulation. Similarly, the fumigation of the raw material may be effected either by heating or by chemical vapour treatment, for more than 4 hours.

If desired, the raw material may be mixed with fertilizer material(s), so that, after use of the packaging material, it is capable of being re-used as plant growth medium.

Recycled wood pulp may be used as a binder to bind microporous coir dust in making packaging for horticultural products and absorbent products on spillage of liquid, and to accelerate growth of plants and retain moisture in the material.

In a particular embodiment, the wood pulp, extracted from pulp based product or re-cycled paper products, is added during bonding of the raw material(s), for adding aesthetic

value to the end product.

The colour and feel are very important for packaging to enhance the value of the product. This is achieved through utilising Flock Technology by implanting flock piles on the package which has monotonous colour. The adding of colour needs impregnation/mixing into the base as usual in pulp packaging thereby utilising larger amounts of colour pigments waste and resource waste, adding more chemicals to the environment or the soil, at degradation. This is minimized by flocking.

So, as a preferred embodiment, flock piles are implanted on the surface of the moulded packaging material to elevate its appeal to the eye.

The impregnated and moisture stored coir dust may be bonded to leak proof paper and used as transport and storage medium for long hours to suit the moisture retention qualities required by the product. Coir dust is bonded to paper using a bonding agent. This paper is then used in packaging of different products, where moisture or aroma retention is a requirement and it is bonded by electrostatical charge 80 Kv where good dispersion breathing qualities are required.

It is to be understood that various modifications of the packaging material according to the invention, and the process for preparing the same, are possible within the scope of what has been described hereinbefore, and will be claimed hereinafter.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A packaging material suitable for packing around an article or articles, said packaging material comprising coir dust and a resilient bonding agent transformed either:

(a) to conform to the shape and dimensions of said article or articles or,

(b) into the form of pellets or granules suitable for use as fillers around said article or articles,

wherein, after use, said packaging material is capable of being re-used as organic matter in horticultural processes.

2. A packaging material according to claim 1, wherein the bonding agent is a latex of natural or artificial rubber, or a mixture of biodegradable natural products.

3. A packaging material according to claim 2 wherein the bonding agent is pulp.

4. A packaging material according to claim 2, or claim 3 wherein the bonding agent has added thereto up to 5% by weight of synthetic bonding materials.

5. A packaging material according to any one of the preceding claims, further comprising one or more agro-

waste materials selected from sawdust, wood chips, bark, wood waste, charcoal, peat, shells, olive residues, coffee hulls, coconut fibre, sunflower husks, cottonseed husks, hazelnut shells, bagasse, hemp, straw, flax, plant stalks, paper waste, malt sprouts, and rice husks.

6. A packaging material according to any one of the preceding claims, further comprising a fertiliser, such that the packaging material after use, is capable of being re-used as a plant growth medium.

7. A packaging material according to any one of claims 1 to 5, wherein the inner surface is transformed to conform to the shape and dimension of said article or articles and the outer surface is given the shape of a standard flower pot such that it is capable of being re-used as a planting medium or moisture returning material.

8. A process for preparing a packaging material suitable for packing around an article or articles as claimed in any one of the preceding claims, which comprises combining a raw material comprising coir dust and a resilient bonding agent, and transforming the mixture either:

(a) to conform to the shape and dimensions of said article or articles, or

(b) into the form of pellets or granules suitable for use as fillers around said article or articles.

9. A process as claimed in claim 8 wherein said raw material further comprises one or more agro-waste materials selected from sawdust, wood chips, bark, wood waste, charcoal, peat, shells, olive residues, coffee hulls, cocoonut fibre, sunflower husks, cottonseed husks, hazelnut shells, bagasse, hemp, straw, flax, plant stalks, paper waste, malt sprouts, and rice husks.

10. A process as claimed in claim 8 or claim 9, wherein the raw material is kept suspended in a solution of the bonding agent until said raw material is bonded within a matrix of said bonding agent.

11. A process as claimed in claim 10, wherein said raw material is fumigated prior to being suspended in said bonding agent.

12. A process according to any one of claims 8 to 11, wherein the solution of said bonding agent is maintained at a temperature ranging from ambient to 120°C.

13. A process as claimed in any one of claims 1 to 12, wherein the solution of the bonding agent is made in a biodegradable liquid medium.

14. A process as claimed in any of claims 11 to 13, wherein the fumigation of the raw material is effected

either by heating or by chemical vapour treatment, for more than 4 hours.

15. A process as claimed in any of claims 8 to 14, wherein the raw material, so bonded with the bonding agent, is moulded so as to have an internal shape and dimension(s) corresponding to the outer shape and dimensions of the article or articles to be packaged.

16. A process as claimed in claim 15, wherein the moulding is done by applying pressure and vacuum.

17. A process as claimed in claim 16, wherein the pressure is maintained in the range of 20 kPa to 13700kPa.

18. A process as claimed in any of claims 8 to 14, wherein the raw material, so bonded with the bonding agent, is centrifuged to form pellets/granules of desired shape and size, for being used as fillers around the articles to be packaged.

19. A process as claimed in claim 18, wherein the bonding of the raw material with the bonding agent is effected by coagulation, the raw material being fumigated prior to said coagulation.

20. A process as claimed in claim 19, wherein the fumigation of the raw material is effected either by heating or by chemical vapour treatment, for more than 4 hours.

21. A process as claimed in any of claims 8 to 20, wherein the raw material is mixed with fertilizer material, so that, after use of the packaging material, it is capable of being re-used as plant growth medium.

22. A process as claimed in any of claims 8 to 21, wherein wood pulp, extracted from pulp based product or re-cycled paper products, is added during bonding of the raw material, for adding aesthetic value to the end product.

23. A process as claimed in any of claims 8 to 22, wherein flock piles are implanted on the surface of the moulded packaging material to elevate its appeal to the eye.

Dated this 13th day of February 1997

PUWAKDANDAWE NARAYANA NANDADASA

By their Patent Attorneys

GRIFFITH HACK

Fellows Institute of Patent

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ABSTRACT

A packaging material, made of coir dust and/or agro-wastes, such as herein described, in particulate form, which is(are) bonded with a resilient bonding agent, such as herein described, and which is transformed either in the shape(s) and dimension(s) of the article(s) to be packaged, or in the form of pellets/granules for being used as fillers around the article(s) to be packaged, such that, after use, the packaging material is capable of being re-used for purpose(s), such as herein described, instead of being added as garbage.