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(56) Documents Cited:
GB 1453904 A

(58) Field of Search:
INT CL **F16B**
Other: **Online: WPI, EPODOC**

(54) Abstract Title: **Resiliently coated screw**

(57) A screw 1 has a head 4 and a shank with a threaded portion 2. At least part of the threaded portion 2 is coated with a resilient elastic coating 3 so that when the screw is inserted in a predrilled hole, the coating 3 grips the hole thus eliminating the need for a separate wall plug.

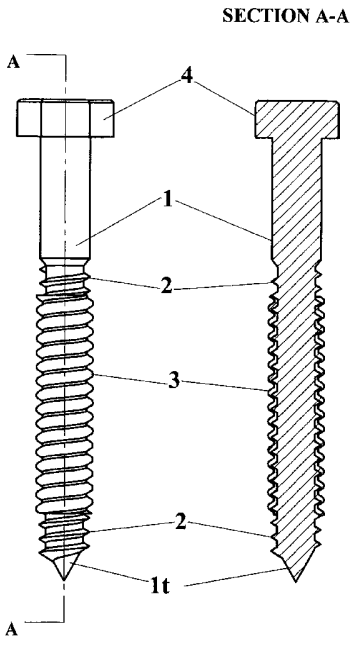

Fig. 1

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SECTION A-A

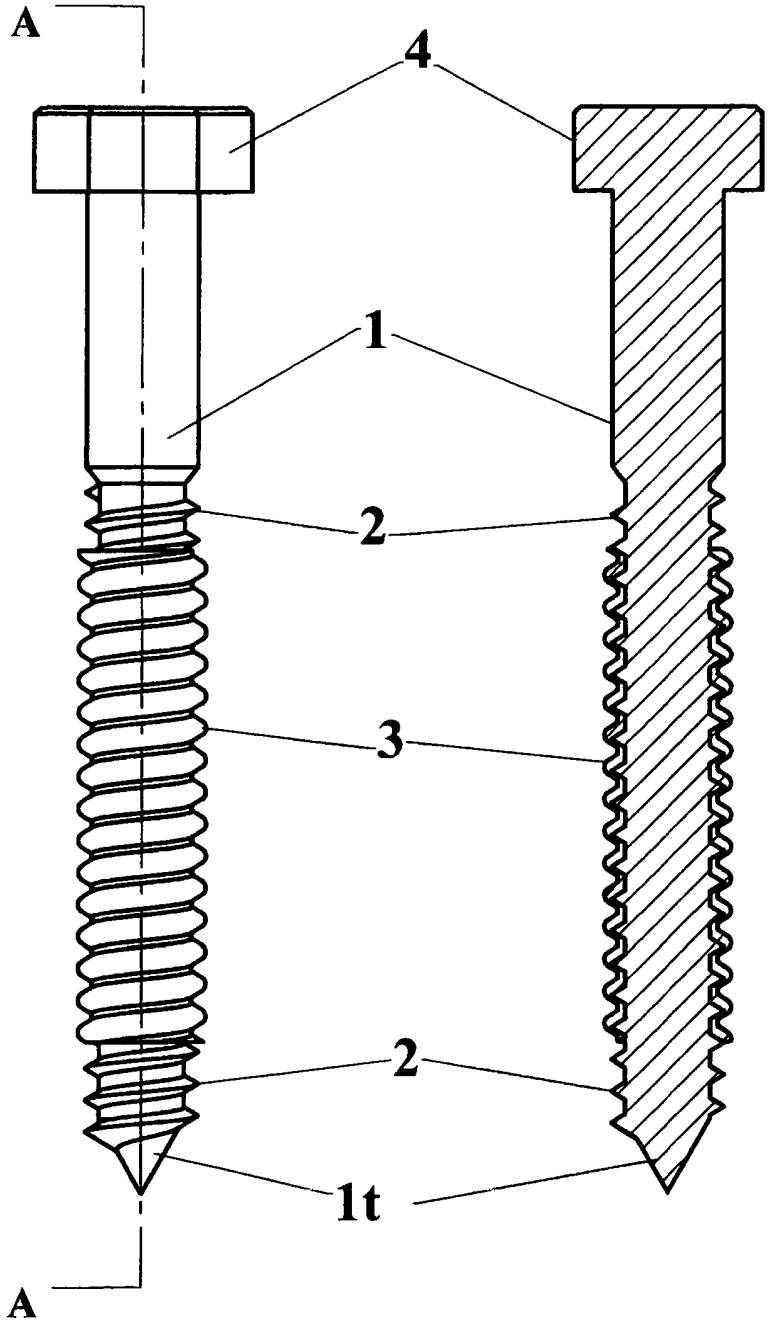

Fig. 1

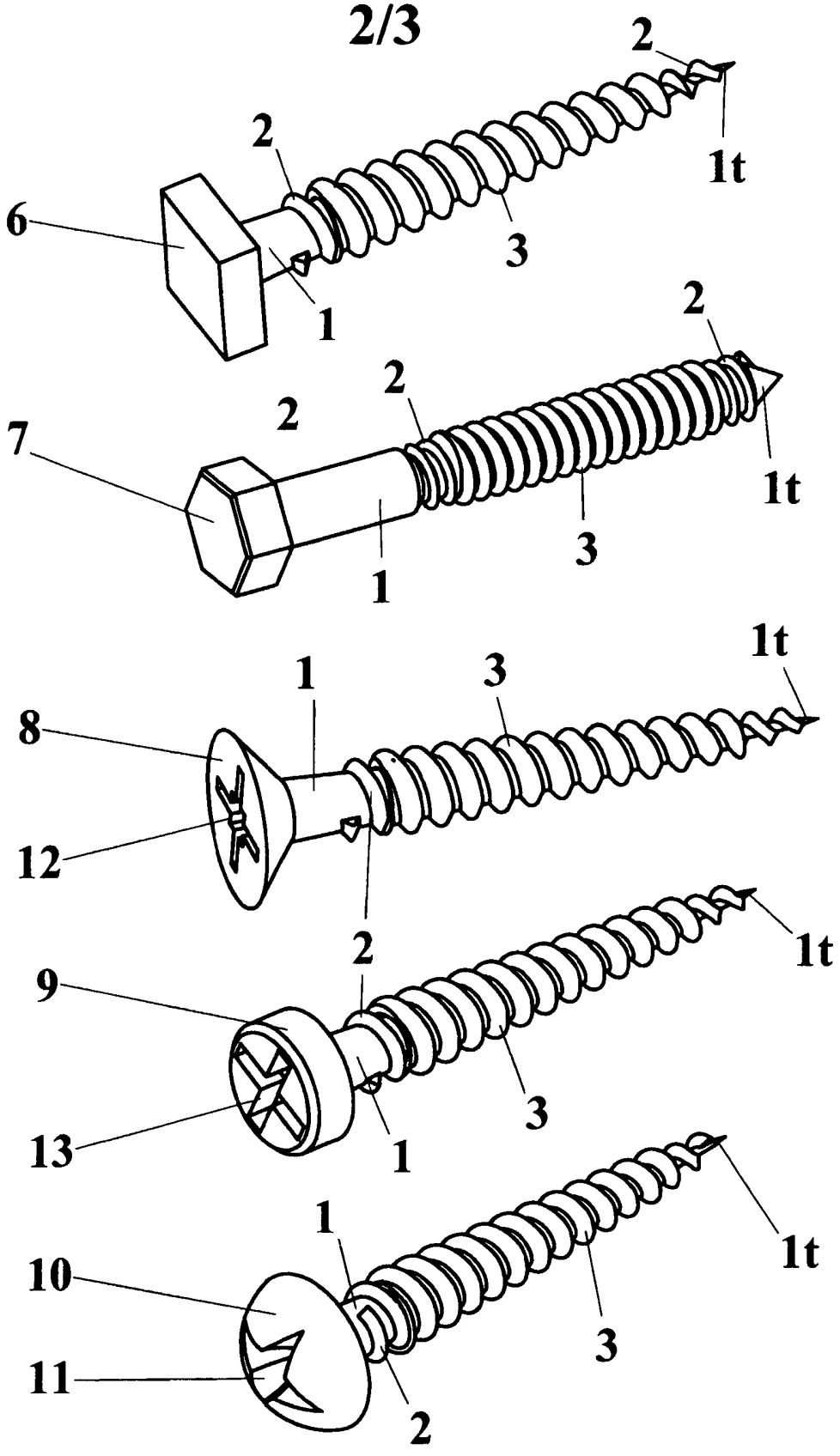

Fig. 2

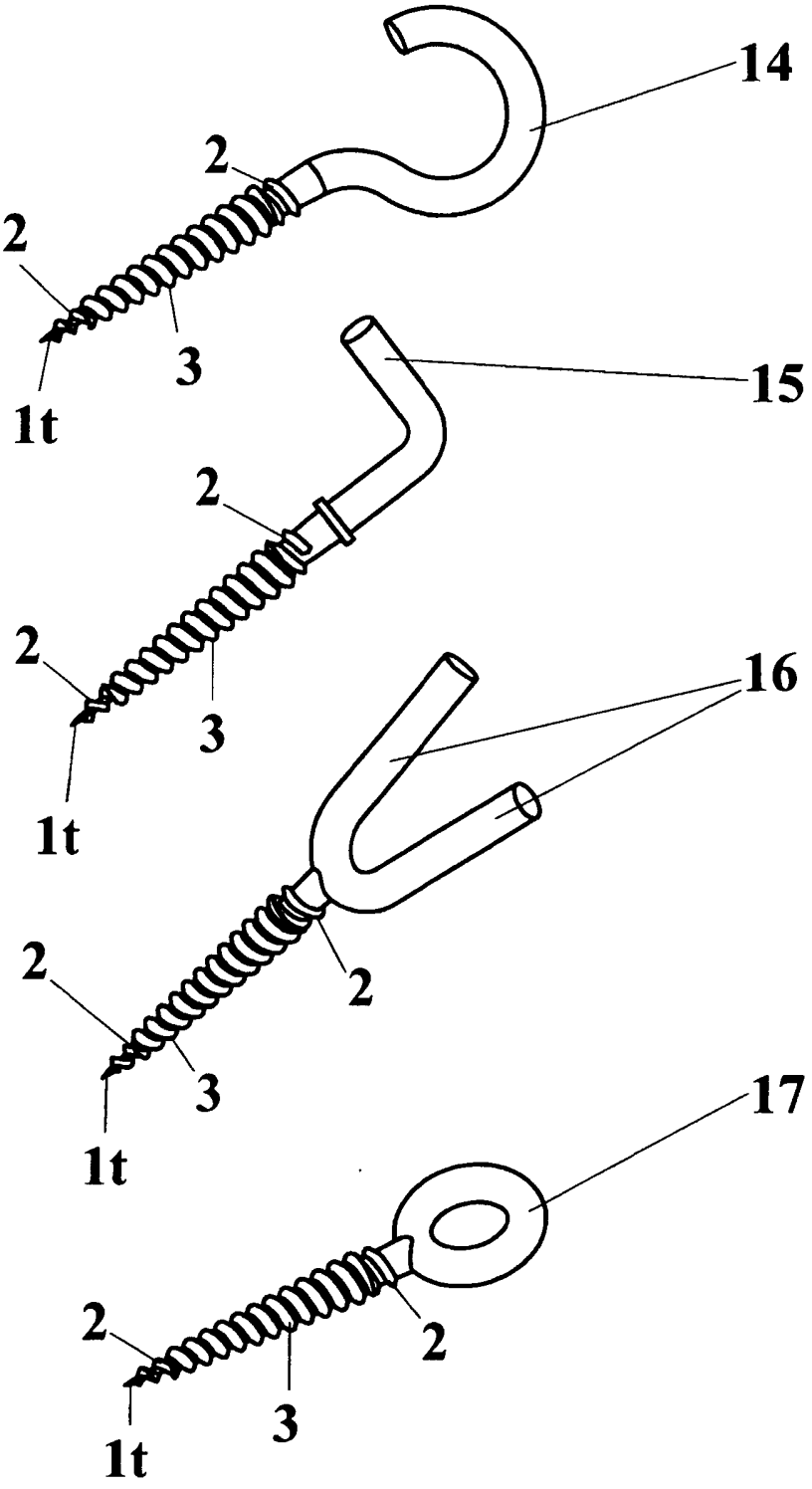

Fig. 3

TRICS™ - Thick Resilient Integrally Coated Screws.

FIELD OF INVENTION:

The invention relates to ***TRICS™*** - "***Thick Resilient Integrally Coated Screws***", to ***supplant & eliminate*** present wall inserts & Rawlplugs® - used for fastening items to drilled holes in masonry walls. This lateral thinking **K**eep **I**t **S**imple invention - ***TRICS™***, directly engages the holes, providing accurate alignment, stronger anchoring, saving time, labour & costs for Professional and DIY clients.

Definitive characteristics of key words used & Excluded in this Invention:

"Masonry Screws" – have tapered tips & deep flat troughs between sharp threads – ***"Machine Screws"*** – have flat tips and smooth symmetrical troughs & threads.

MACHINE SCREWS ARE SPECIFICALLY EXCLUDED IN THIS PATENT.

Drawbacks of Rawlplugs® &Wall Inserts: - Even Rawlplug®, the popular successful wall fixing Company, concede (through statements in successive patents) that Rawlplugs® are beset with drawbacks - a few of which are cited below:-

a. Hole too deep, Rawlplug® pushes too far in, fixing screw fails to engage.

b. Solution - use Rawlplug® with rim! – New drawback, rim proud, impedes flush fixing.

c. Fixing screw fits Article's holes, but matching Rawlplugs® required do not.

d. Two masonry drill-bits, required 1st for screw, 2nd for fatter Rawlplug®.

e. Rawlplugs® being fatter, article's holes cannot serve as drilling template.

f.. Heavy anchoring loads require bulky, expensive, expansible Rawlbolts®.

g. Insert provided with Hammer fixings are too fat for article's holes.

h. Rawlplugs® and Hammer fixing inserts cannot be removed or re-used.

See page 2 for TRICS™ solutions to above drawbacks & problems.

Drawbacks of Concrete Screws: These self tapping unclad tapered tip screws are only suitable for light loads as substrates of concrete, bricks, plaster & mortar disintegrate when subjected to screw tension & shear.

Solution - ***TRICS™*** & Rawlplugs® use compression to obtain good anchorage in walls.

TRICS™ Solutions to Drawbacks & Problems of present Rawlplugs.

The present invention overcomes all the cited drawbacks of Rawlplugs® by lateral thinking - providing a single unified **TRICS™** - **T**hick **R**esilient **I**ntegrally **C**oated **S**crew to supplant and eliminate Rawlplugs®, and their problems as follows:-

a. Hole too deep, no problem, **TRICS™**, thick resilient coating engages on insertion.

b. Rim! **TRICS™** has no rim, giving inherent flush fixing.

c. **TRICS™** screw & resilient coating both fit Article's holes.

d. Only one size drill required when using **TRICS™**.

e. With **TRICS™** article's holes can be used as drilling template.

f. **TRICS™** concept cater for **light & heavy anchoring loads.**

g. **TRICS™** ***work as hammer fixings and fit article's holes.***

h. **TRICS™** screwed in or hammer fixed can be unscrewed and re-used.

Prior Art – Patent & Product Searches - No Anticipations:

At the time of filing, a ***Worldwide Patent Database Search*** carried out on the ***European Patent Office esp@cenet*** Patent Search Engine showed ***no prior art*** of a Thick Resilient Integrally Coated Tapered Tip Screw as characterised in this Patent.

"Coated Machine Screws" are Not Anticipations: Present Nylon coated Eslok®, Scotchgrip®, Precote®, Torque Tip®, Microseal®, and Driseal screws are **not anticipations** as they are ***machine screws*** which are ***specifically excluded from scope of this invention*** – see claim 4.

Also, for these ***machine screws*** products to work necessitates a ***thin coating*** or ***thin patch*** in the thin clearance between machine threads. This invention specifically embodies a ***thick*** coating on the threads see ***first word of every claim*** of this Patent.

Product Searches on the World Wide Web showed ***no web sites*** or descriptions matching the claims cited in the present patent. Furthermore, searches through specialist screw supplier websites & catalogues – ScrewFix, trade hardware shops and large DIY chain stores - B & Q, Wicks and Homebase show no availability of present invention.

SUMMARY OF INVENTION: "Thick Resilient Integrally Coated Screws" ***to supplant & eliminate Rawlplugs®***, comprises tapered tip metal screws, with assorted integral screw heads have screw threads thickly coated with resilient elastic material.

USES: ***To supplant & eliminate*** concrete screws & Rawlplugs® - ***expansible wall inserts***, used for fastening items to masonry walls.

ADVANTAGES:

1. Saves time, labour & costs on repetitive accurate masonry screw fixing tasks.
2. Instant alignment in one go, after each drilling using fixture items' holes only.
3. Eliminates additional alignment templates requiring removal to insert wall plugs.
4. Eliminates separate boxes for screws & separate boxes for mating wall plugs.
5. Eliminates frustrations arising from mismatch of right screw / wrong wall plug.
6. Requires smaller diameter drilled holes than the fatter wall plugs they ***eliminate***.
7. Stronger - 360° resilient anchorage v/s quadruple faceted Rawlplugs® contact.

REFERENCE TO DRAWINGS:

Figure 1 shows a front elevation and hatched sectional illustration of one embodiment of the present invention shown on its own, clearly illustrating the thick, elastic coating bonded to the screw threads of a tapered tip screw.

Figure 2 Shows 3D illustrations of examples of commonly available ***screw head shapes*** and examples of commonly available ***screw driver recesses***.

Figure 3 Shows 3D illustrations of examples of commonly available functional article ***hanging head shapes***.

DESCRIPTION

1. Referring to the drawings, the present invention titled "Thick Resilient Integrally Coated Screws ", (***to supplant & eliminate Rawlplugs®***), comprises a tapered tip, 1t, metal screw, 1, having substantial length of screw threads, 2, thickly coated with resilient elastic material, 3, integrally adhered by bonding process means, said screw, 1, provided with assorted commonly available screw heads, 4.

2. The resilient elastic material, 3, includes all flexible, resilient elastic synthetic materials suitable for bonding to metal screw threads, 2, - plastic, nylon, PTFE, silicone and polythene.

3. The scope of the "integrally adhered by bonding process means" covers all available bonding, treatment & coating process means - dipping, chemical bonding process means, heat bonding process means and related mass production process & handling means.

4. The profiles of the threads, 2, of the metal screw, 1, includes all commonly available tapered tip, 1t, metal screw profiles, sizes and thread forms including single helix, double helix, and treble helix, commonly available thread angles, thread pitches and thread shapes, ***but specifically excludes machine screw threads***.

5. The scope of the assorted commonly available screw heads, 4, includes all commonly available screw driver head shapes (fig. 2), - square, 6, hex,7, countersink, 8, pan, 9 & dome, 10, the heads are provided with all commonly available screw driver recess shapes, including Philips®, 11, Posidrive®, 12, & Crosshead®, 13, driver recess means, additionally the screw head shapes (figs. 2 & 3) also includes embodiment of all commonly available item hanging functional head shapes including hooks - C, 14, L, 15, and Y, 16, shapes, and eye, 17, head shapes.

6. The scope of the metal of the metal screw means includes commonly used high tensile strength metal materials, - brass, all steels as well as commonly used finishes, coatings, plating, and treatments used in the manufacture of screws.

7. Optionally the substantial length of screw threads, 2, thick coating, 3, excludes coverage at start of first few threads (near tip, 1t,), and excludes coverage of end few threads (near head, 4.), and thickness of the coating, 3, and profile is provided to significantly follow profile of the screw threads, 2.

8. Optionally one preferred the heat bonding process means and related mass production process & handling means (not illustrated) comprises the screw heads held and rotated on electrically earthed, mating, magnetic mandrill means, induction heated to temperatures around 215° C, fusing and bonding of Nylon 11 powder (containing pigment and primer) electro-statically spray deposited (at electro-static voltages exceeding 10 KV) on to substrate - metal threads surface – with automatic process control means to ensure consistency of the described specific coverage plus peel-off proof integral adhesion of thick elastic nylon coating to the threads.

9. Optionally another alternative bonding process means and relative mass production process & handling means (not illustrated) comprises multiples of the screw head each held and rotated on multiple magnetic mandrill jig means, provided with dip coating process means of the threads into a sequence of vessels containing semi-liquid primer, resilient elastic material, then fixative process means, followed by conveyor handling and packaging means..

CLAIMS:

1. Thick Resilient Integrally Coated Screws , (***to supplant & eliminate Rawlplugs®***), comprising tapered tip, metal screw means, having substantial length of screw threads thickly coated with resilient elastic material means, integrally adhered by bonding process means, and integrally provided with assorted commonly available screw head means.

2. Thick Resilient Integrally Coated Screws as in claim 1, wherein said resilient elastic material means, includes all flexible, resilient elastic synthetic materials suitable for bonding to metal screw threads - plastic, nylon, PTFE, silicone and polythene.

3. Thick Resilient Integrally Coated Screws as in claim 2, wherein scope of said "integrally adhered by bonding process means" covers all available bonding, treatment & coating process means - dipping, chemical bonding process means, heat bonding process means and related mass production process & handling means.

4. Thick Resilient Integrally Coated Screws as in claim 3, wherein profiles of threads of said metal screw means includes all commonly available tapered tip, metal screw profiles, sizes and thread forms including single helix, double helix, and treble helix, commonly available thread angles, thread pitches and thread shapes – all claims ***specifically exclude machine screw threads***.

5. Thick Resilient Integrally Coated Screws as in claim 4, wherein scope of said assorted commonly available screw head means includes all commonly available screw driver head shapes - square, hexagon, countersink, pan, & dome, including all commonly available screw driver recess shapes - Philips®, Posidrive®, & Crosshead® driver recess means, additionally said screw heads include embodiments of all commonly available item hanging functional head shape means - C, L and Y shaped hooks, and eye head shapes.

6. Thick Resilient Integrally Coated Screws as in claim 5, wherein scope of said metal of said metal screw means includes commonly used high tensile strength metal materials, - brass, all steels as well as commonly used finishes, coatings, plating, and treatments used in the manufacture of screws.

7. Thick Resilient Integrally Coated Screws as in claim 6, wherein optionally said substantial length of screw threads thick coating excludes coverage at start of first few threads (near tip of tapered threads), and excludes coverage of end few threads (near head), and thickness of said coating and profile is provided to significantly follow profile of said screw threads.

8. Thick Resilient Integrally Coated Screws as in claim 7, wherein one preferred said heat bonding process means and related mass production process & handling means comprises said screw heads held and rotated on electrically earthed, mating, magnetic mandrill means, induction heated to temperatures around 215° C, fusing and bonding of Nylon 11 powder (containing pigment and primer) electro-statically spray deposited (at electro-static voltages exceeding 10 KV) on to substrate - metal threads surface – with automatic process control means to ensure consistency of said described specific coverage plus peel-off proof integral adhesion of thick elastic nylon coating to said threads.

9. Thick Resilient Integrally Coated Screws as in claim 8, wherein another alternative bonding process means and relative mass production process & handling means comprises multiples of said screw head each held and rotated on multiple magnetic mandrill jig means, provided with dip coating process means of said threads into a sequence of vessels containing semi-liquid primer, resilient elastic material, then fixative process means, followed by conveyor handling and packaging means..

Intellectual Property Office

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Application No: GB0802968.8 **Examiner:** Peter Macey

Claims searched: 1 - 9 **Date of search:** 28 February 2008

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1 - 6	GB 1453904 A (HADAWAY) see especially figure 1

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

F16B

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
F16B	0013/04	01/01/2006
F16B	0033/06	01/01/2006