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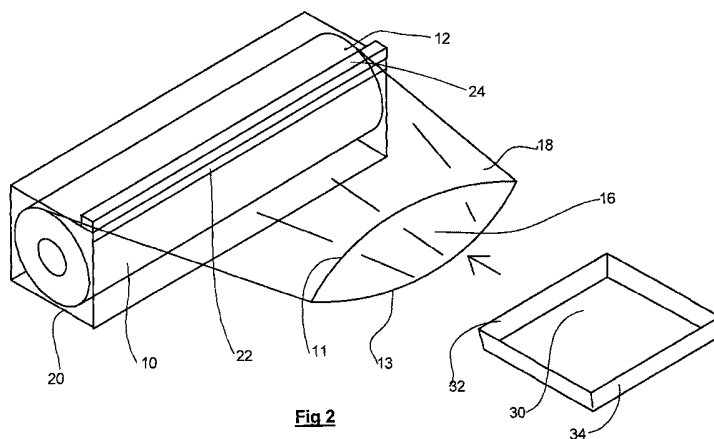
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(56) Documents Cited:  
**GB 2439715 A** **US 5895587 A**  
**US 5407611 A** **US 4320699 A**

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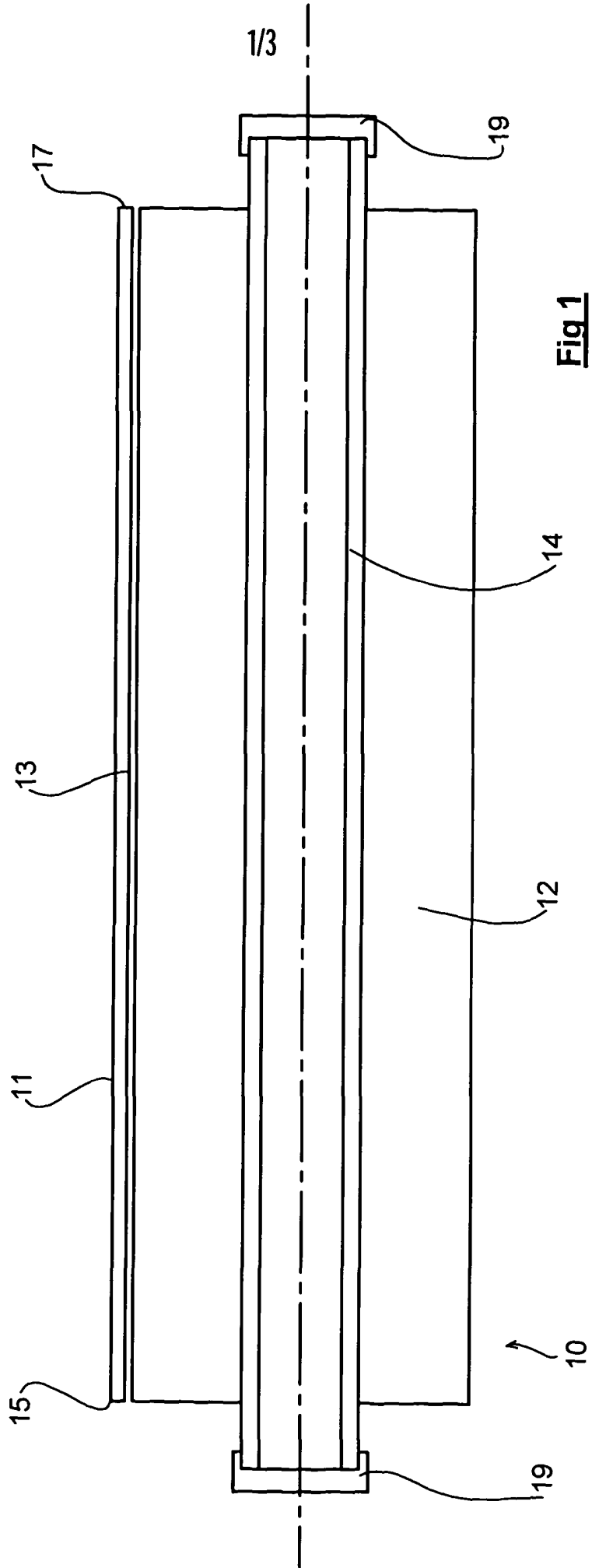
(54) Title of the Invention: **A sheet material, a sheet material dispenser, and a method of preparing containers**  
Abstract Title: **Lining a food container with tubular material**

(57) A roll of heat resistant material 10 is supplied from a dispenser 20. The heat resistant material 10 is in the form of a seamed tube laid flat on the roll 10 and inserted into the dispenser 20. A free end 18 of the material is pulled from the roll in the dispenser and two layers 11 and 13 of the flattened material are separated such that a food container 30 can be inserted into the resulting gap 16. The free end 18 is severed from the remaining material 12 on the roll, and the container 30 is thus covered top and bottom with the a sleeve of the material ready for placing food onto of the upper layer 11, prior to cooking the food or food storage.

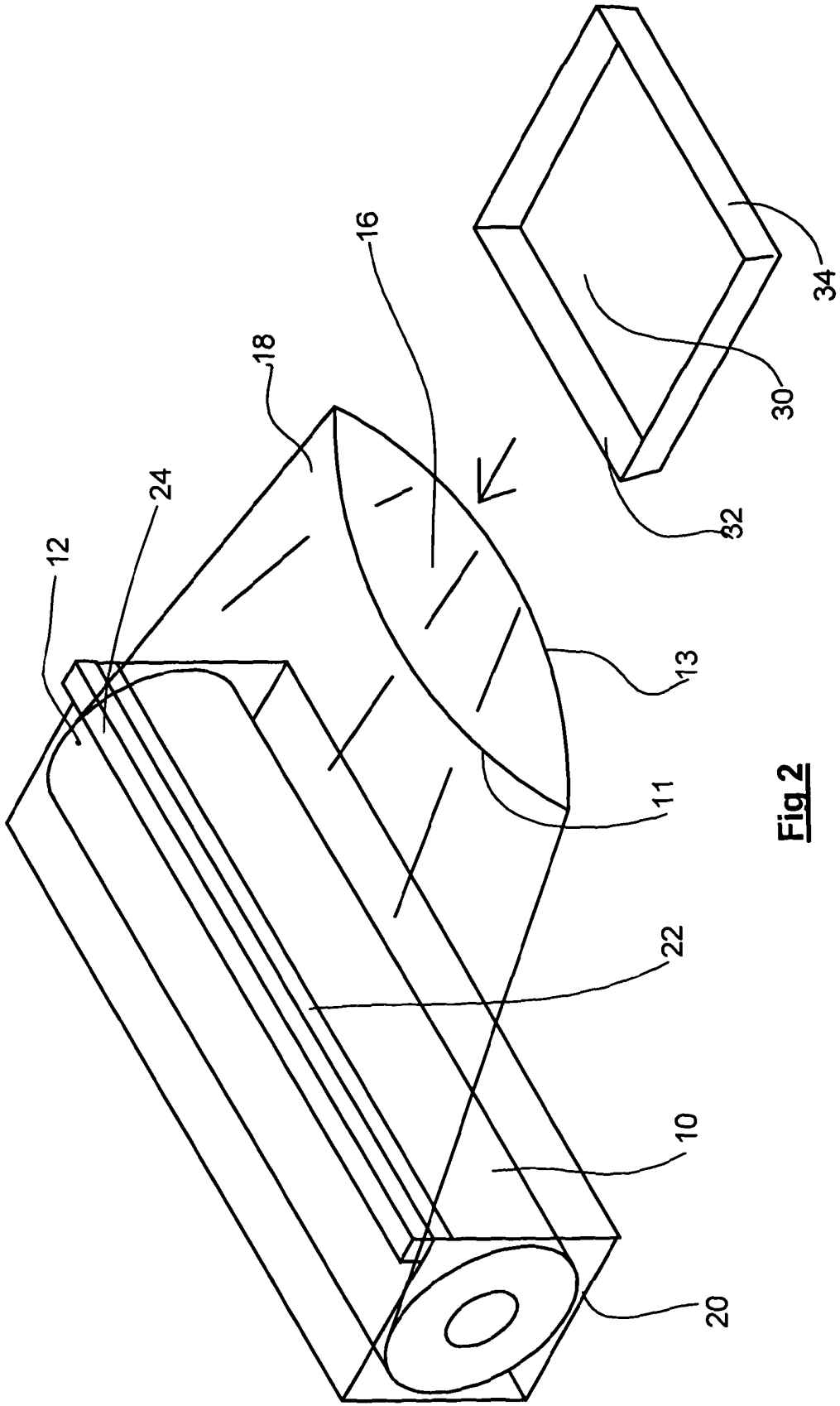


**Fig 2**

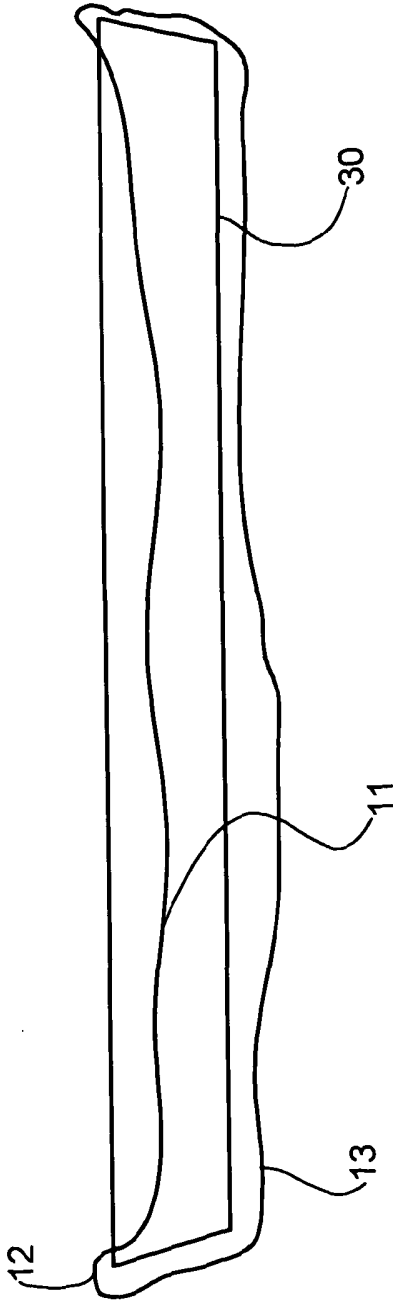
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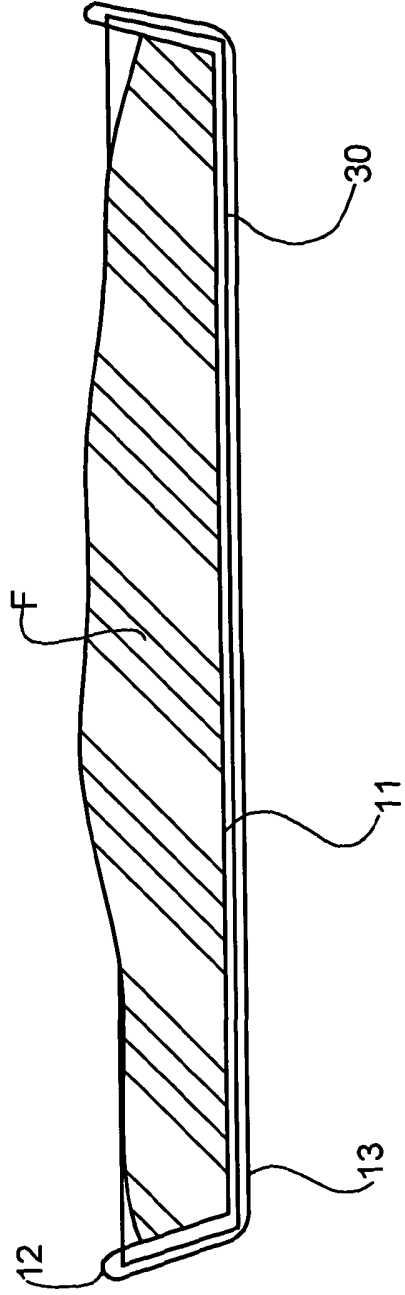
**Fig 1**



**Fig 2**



**Fig 3**



**Fig 4**

A sheet material, a sheet material dispenser, and a method of preparing food containers

This invention relates to a sheet material, a dispenser for dispensing the sheet material, for example film sheet material, suitable for preparing food  
5 containers, and a method of preparing said food containers utilising said sheet material.

The invention makes use of concepts described and illustrated in patent applications PCT/GB2010/050001 and GB0910088.4 and disclosures in those applications are incorporated by reference herein in their entirety.

10 Preformed food tray liners are commercially available which can be placed in a baking tray prior to food being placed in the tray, prior to cooking the food in the lined tray. The known liner may be disposed of after cooking with the aim of leaving a relatively clean tray. Cooking trays are usually different sizes, and so preformed tray liners need to be matched in size to each tray.  
15 Commercially available cooking trays are available in standard sizes known as Gastronorm sizes. The vast majority are known as size 1:1 or size 1:2. Even though these trays may have one of their dimensions in common, two sizes of tray liner are required to line these two popular sizes. Thus two stacks or boxes of liners need to be stocked, which takes up space. Space is often limited in  
20 commercial kitchens. These commercially available liners are moulded to fit a particular size of tray and are therefore relatively expensive.

Additionally, it is known to place aluminium foil, or other sheet material, inside a baking tray with the purpose of protecting the inner surfaces of the tray from baked-on food. Commercially available foil is weak and tends to tear,

particularly when the foil is pushed down into the tray. The Gastronorm sizes mentioned above have a minimum dimension of 45 cm, and foil to fit such a size tray, with foil left over for forming into the tray and to cover the sides of tray, will need to be at least 65 cm. Foil of this width is not generally available in the UK.

5 Thus the foil has to be joined, which takes time and the joins tend to leak. Whilst both known techniques mentioned above, and other techniques, are effective at reducing the need to clean the baking tray, they are not completely effective, because some food tends to boil, splash or spit over the protective liner or foil, and in some cases finds its way either onto the outer edge of the  
10 tray, or between the tray and the liner or foil. Also, food from adjacent trays can splatter on to the edges of the lined tray. In particular, where trays are stacked in an oven, the underside of a tray directly above another tray in the stack is not protected. So the need to clean the tray is not completely eliminated by known techniques for protecting oven trays.

15 Both preformed liners, foil and like materials are usually stored in cardboard containers or dispensers. These containers or dispensers tend to get dirty and wet in commercial kitchens, and therefore they are a health risk or tend to fall apart.

20 Embodiments of the invention address at least some of the problems mentioned above.

According to a first aspect of the invention, there is provided a sheet material in the form of a roll of material suitable for forming a liner by separating food from a food container during cooking of the food, characterised in that the material on the roll is a flattened tube.

In this way the tube of material can be unrolled and the container can be placed inside the tube to form a sleeve around container. Subsequently or beforehand, the sleeve can be severed from the remaining tube of material on the roll to form a sleeve open at both ends, but protecting the container. Food  
5 can be placed on the top surface of the sleeve of the material inside the container. The sleeve of material overlies and underlies the container and so it better protects the container from food spillages, for example during cooking.

According to a second aspect of the invention, there is provided a dispenser for dispensing a sheet material, the dispenser including a roll of  
10 material suitable for separating food from a food container during cooking of the food, characterised in that the material is a tube laid flat on the roll and the material is unwound off the roll in use.

In an embodiment, the dispenser includes a severing device for severing a dispensed length of the material from the roll.

15 Preferably the severing device is a cutter, more preferably a bladed cutter, for example of the type described in PCT/GB2010/050001. Preferably the dispenser includes a support for the roll, said support having formations which are complementary to formations formed at one or more of the axial ends of the roll.

20 Preferably said formations and complementary formations allow only a matching roll and dispenser to be combined, for example of the type described in GB0910088.4

According to a third aspect the invention provides a method of preparing a food container, having the steps of:

- f) providing a sleeve of heat resistant flat tubing, and
- g) inserting said food container into said sleeve to line a surface thereof.

5 Preferably the method further includes any one or more of the following steps:

- a) forming a tube of material suitable for separating food from a food container during cooking;
- b) laying substantially flat the tube of material so that two layers of the material are substantially touching and rolling the tube of material to form  
10 a roll of material;
- c) fitting the roll in a dispenser;
- d) unrolling a portion of the material from the roll;
- e) separating the two layers to form said sleeve;
- h) severing the sleeve from the roll;
- 15 i) placing food on top of the lined surface in the container;
- j) cooking the food;
- k) serving the food; and
- l) removing and disposing of the sleeve.

20 According to the three aspects of the invention above the sheet material may be further characterised by the options mentioned below.

In an embodiment the tube is formed by means of a seam.

Preferably the tube has no discontinuities such as joins, separations or perforations across its width.



Preferably the tube is substantially transparent.

In an embodiment the material is a synthetic polymer, or natural polymer, including biopolymers, resistant to heat above a temperature of about at least 200 degrees Celsius (400 degrees Fahrenheit). The term resistant to heat above about 200 degrees Celsius, herein refers to a thermoplastic crystalline melting temperature ( $T_m$ ) above about 200 degrees Celsius or for a thermosetting polymer the onset of decomposition is above about 200 degrees Celsius.

More preferably the temperature mentioned in the paragraph immediately above, is a temperature above about 225 degrees Celsius.

In an embodiment the polymer is a polyester for example polyethylene terephthalate (PET), a polyamide, for example Nylon, a polyurethane or combinations including one or more of those polymers.

In an alternative, the material is a fibre based material. Preferably the fibre material is coated or has absorbed therein a further heat resistant material.

The invention extends to a combination of a sheet material and a baking tray, the dimensions of the sleeve and tray being such that the tray fits loosely inside the sleeve, and when food is placed in the tray, the sleeve is a snug fit around the tray, for example so that the sleeve then touches the majority of the underside of the tray in use and/or there are substantially no creases in the sleeve, for example on the underside of the sleeved tray.

The invention may be put into effect in numerous ways, one example only being described and illustrated herein by way of example, with reference to the drawings wherein:-

Figure 1 shows a roll of material according to the invention;

Figure 2 shows the roll illustrated in Figure 1 fitted to a dispenser and a food tray;

Figure 3 shows a section through the food tray shown in Figure 2 surrounded by a sleeve of the material from the roll shown in Figures 1 and 2;  
5 and

Figure 4 shows the tray of Figure 3 loaded with food.

Figure 1 shows a roll 10 of sheet material 12. The roll is formed by winding the material 12 in a tight coil around a tubular former, in this case a cardboard former 14 having ends 19 discussed in more detail below.

10 Prior to forming the sheet material 12 on the roll, the material 12 is manufactured in a sheet form then its edges are joined by a seam to form a tube. The tube is then flattened and rolled on to the former 14. The material 12 has no discontinuities, such as joins, separations or perforations laterally of the material and has, when laid flat and rolled, two layers 11 and 13 which are  
15 brought together and two folded sides 15 and 17 at each side of the roll 10.

The material 12 can be any suitable generally heat resistant material, but is, in this embodiment, a film manufactured from a polyester for example polyethylene terephthalate. In this embodiment the material is intended to separate food from a food container during cooking, and therefore the material  
20 should be able to withstand temperatures of at least about 200°C. In practice, this material is usable in an oven having an internal temperature up to around 200 °C, so its crystalline melting temperature ( $T_m$ ) is above about 200°C and preferably above about 220°C.

Referring to Figure 2, the roll 10 has been placed in a dispenser box 20 which includes a slot 22 through which a free end 18 of the material 12 can be pulled.

In use the layers 11 and 13 are separated at the free end 18 to form an area 16 into which a cooking container can be inserted, in this case a standard size Gastronorm baking tray 30. The dispenser 20 includes a cutter 24 which can be used to sever the free end 18 from the remaining material 20 on the roll. The cutter 24 is then lifted and a further free end is pulled off the roll ready for use. The free end 18 thus forms a sleeve of material around the baking tray 30 with two open ends which overlap the ends 32 and 34 of the tray.

Figure 3 shows a lateral section of the baking tray 30 with the sleeve of material placed around the tray to form the top layer 11 adjacent the top of the tray 30, and the lower layer 13 adjacent the under side of the tray 30. It will be noted that the size of the sleeve allows the standard size Gastronorm tray to be inserted with ease. It is possible that trays having the same widths but longer sides (as with the Gastronorm 1:1 and 1:2 trays mentioned above) can all fit in the sleeve.

The sleeve 30 can be smoothed into the tray 30 if needed. It has been found that the polyester material used, 'sticks' to the tray, it is believed by static electrical attraction. Also the material used is sufficiently malleable, at room temperature to follow the contours of the trays lined.

Figure 4 shows a lateral section the baking tray 30 with food F disposed on the top layer 11 of the sleeve material 12. This means that the layer 11 of the sleeve material 12 is interposed between the baking tray 30 and the food and

forms a sleeve which completely envelops or overlaps the baking tray 30 and keeps it cleaner than when using prior techniques mentioned above. In particular, having now taken up the contours of the tray, the sleeve is now a snug fit around the tray 30, with substantially no creases or slackness, for example on the underside of the tray 30. The sleeve will in practice be in contact with a majority of the inside and underside of the tray 30, in this state, but in order to distinguish the various layers more clearly in the drawing, the layers 11 and 13 have been shown slightly spaced from the tray 30. This arrangement has the advantage that it is easier to manoeuvre the tray in and out of the oven, and the sleeve is less likely to tear in use.

After cooking and serving food F the sleeve can be disposed of, leaving a clean baking tray 30 on its upper and lower surfaces. When further cooking operations are required, a free end 18 can be pulled from the roll 10 and again severed either before or after the tray 30 has been placed in an open end 16 formed when the upper and lower layers 11 and 13 are separated.

One embodiment of the invention has been described and illustrated, although it will be apparent to the skilled addressee that variants, modifications, additions and omissions are possible within the scope of the invention. For example, although a polyester sheet material 12 has been described above, it will be apparent that other heat resistant materials could be employed. For example, woven materials (including woven polymer fibres), non-woven materials such as paper or other natural fibres either treated or untreated, felted material or animal products. A silicon material could be employed for example a silicon elastomer. The lining material 12 is preferably transparent so that the

underlying food container or tray 30 can be aligned more easily in the sleeve of material, and so it can be quickly seen that all the underlying air has been removed when fitting the sleeve into the inside of the tray. However, translucent or opaque lining material could be used. A seamed tube has been described but a seamless tube could be employed. The roll 10 may have formations, for example formations 19 at one or more ends which fit with complimentary formations (not shown) formed in the dispenser 20, whereby only a genuine heat resistant roll 10 can be fitted to the dispenser. This deters users from putting a roll of material, which could be unsuitable for cooking, into the dispenser, thus avoiding possible accidental contamination of food products as a result of an inadequate or unsuitable tray lining material. Such complimentary formations are described in GB0910088.4.

Claims

1. A sheet material in the form of a roll of material suitable for forming a liner by separating food from a food container during cooking of the food, characterised in that the material on the roll is a flattened tube.
- 5 2. A dispenser for dispensing a sheet material as claimed in claim 1 wherein the material is unwound off the roll in use.
3. A dispenser as claimed in claim 2, further including a severing device for severing a dispensed length of the material from the roll.
4. A dispenser as claimed in claim 3, wherein the severing device is a cutter,  
10 for example a bladed cutter.
5. A dispenser as claimed in any one of claims 2, 3 or 4, further including a support for the roll, said support having formations which are complementary to formations formed at one or more of the axial ends of the roll.
6. A dispenser as claimed in claim 5, wherein said formations and  
15 complementary formations allow only a matching roll and dispenser to be fitted into the dispenser.
7. A method of preparing a food container, having the following steps
  - f) providing a sleeve of heat resistant flat tubing, and
  - g) inserting said food container into said sleeve to line a surface  
20 thereof.
8. A method of preparing a food container, as claimed in claim 7 having any one or more of the following steps
  - a) forming a tube of material suitable for separating food from a food container during cooking;

- b) laying substantially flat the tube of material so that two layers of the material are substantially touching and rolling the tube of material to form a roll of material;
  - c) fitting the roll in a dispenser;
  - 5 d) unrolling a portion of the material from the roll;
  - e) separating the two layers to form said sleeve;
  - h) severing the sleeve from the roll;
  - i) placing food on top of the sleeve in the container;
  - j) cooking the food;
  - 10 k) serving the food; and
  - l) removing and disposing of the sleeve;
9. A sheet material, a dispenser or a method of preparing a food container as claimed in any one of the preceding claims, wherein the tube is formed by means of a seam.
- 15 10. A sheet material, a dispenser or a method of preparing a food container as claimed in 9 wherein the tube has no discontinuities such as joins, separations or perforations across its width.
11. A sheet material, a dispenser or a method of preparing a food container as claimed in any one of the preceding claims, wherein the tube is substantially
- 20 transparent.
12. A sheet material, a dispenser or a method of preparing a food container as claimed in any one of the preceding claims, wherein the material is a synthetic polymer, or a natural polymer, including biopolymers, or, resistant to

heat above a temperature of about 200 degrees Celsius (400 degrees Fahrenheit).

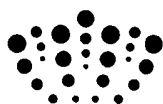
5 13. A sheet material, a dispenser or a method of preparing a food container as claimed in claim 12, wherein said material resistant to heat up to about 225 degrees Celsius.

10 14. A sheet material, a dispenser or a method of preparing a food container as claimed in any one of the preceding claims, wherein the material is a polymer selected from a group consisting of polyester for example polyethylene terephthalate (PET), polyamide, for example Nylon, polyurethane or combinations including one or more of those polymers.

15 15. A combination of a sheet material as claimed in any one of the preceding claims, and a baking tray, the dimensions of the sleeve and tray being such that the tray fits loosely inside the sleeve, and when food is placed in the tray, the sleeve is a snug fit around the tray.

15 16. A sheet material, a dispenser or a method of preparing a food container substantially as described herein, optionally with reference to the drawings.





**Application No:** GB1011116.9

**Examiner:** Mr Philip Osman

**Claims searched:** 1, 7-15

**Date of search:** 14 October 2010

**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 at least	US5407611 A (WILHOIT et al) See in particular column 6 lines 48-68
X	1 at least	US5895587 A (SORENSEN) See in particular column 5 lines 45-67
A	-	GB2439715 A (KENT) See abstract and figures
A	-	US4320699 A (BINKS) See abstract and figures

**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<sup>X</sup> :

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

A21B; A47J; B65B

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

EPODOC, WPI, Internet

**International Classification:**

Subclass	Subgroup	Valid From
A21B	0003/13	01/01/2006
B65H	0016/06	01/01/2006
A47J	0036/16	01/01/2006
B65B	0009/13	01/01/2006