(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 609 732 A1**

# (12) EUROPEAN PATENT APPLICATION

(21) Application number: **94100932.6**

(51) Int. Cl.[5]: **D21H 27/08**, D21H 19/66

(22) Date of filing: **24.01.94**

(30) Priority: **02.02.93 IT BO930028**

(43) Date of publication of application:
**10.08.94 Bulletin 94/32**

(84) Designated Contracting States:
**DE FR GB**

(71) Applicant: **ALFAC S.r.l.**
**Via Emilia Levante 168**
**I-40064 Ozzano Emilia, (Prov. of Bologna) (IT)**

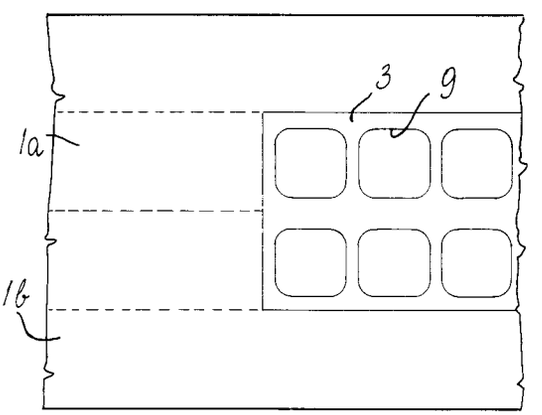
(72) Inventor: **Facchini, Libero**
**Via Pontebuco 22**
**I-40068 San Lazzaro di Savena, Bologna (IT)**

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
**Modiano & Associati S.r.l.**
**Via Meravigli, 16**
**I-20123 Milano (IT)**

## (54) Process and device for preparing filter paper.

(57) The process for preparing filter paper to produce bags for infusion products entails the application, on a ribbon (1) of filter paper, of a coating layer (3) of thermoplastic material which is localized on a grid-like portion that is suitable to surround individual regions (9) of untreated paper which correspond to containment chambers for respective doses of infusion product. The coating layer (3) is deposited on a central band (1a) of the ribbon so as to define lateral bands (1b) which are foldable onto the central band, whereupon heat-welding at the coating layer regions produces the infusion product bags.

FIG. 3




EP 0 609 732 A1

The present invention relates to a process for preparing filter paper, particularly for producing bags for infusion products, and to a device for performing this process.

As is known, items made of a filtering material, such as paper, are used in the production of filter bags for infusion products such as tea and the like. The bags are generally formed by folding a ribbon of filter paper longitudinally and by then producing a series of transverse folds so as to obtain individual tubular items filled with a dose of the infusion product; these items are then closed and separated from one another.

Two-chamber bags have also recently achieved widespread use; in these bags, the tubular item made of filter paper is folded transversely in half, conveniently forming a sort of bellows at the folding line; the two chambers are suitable to contain respective doses of the product, so as to obtain better infusion. The two chambers of the bag can be mutually connected or separated by means of a seam line which is transverse to the tubular item.

The bags are sometimes closed by means of a metal staple which also retains a suspension cord provided with a label at its loose end. This solution ensures good infusion and is furthermore relatively economical. However, it has been observed that the presence of the metal closing staple is generally not appreciated by consumers.

As an alternative, it is known to use filter paper that has a coating layer made of thermoplastic material and allows to close the bags by hot welding. However, this filter paper is more expensive, heavier and sometimes difficult to have in supply since its production is currently controlled by a limited number of industries. The fact is furthermore noted that this filter paper with a thermoplastic coating can partially slow the infusion process and give unpleasant tastes to the infusion.

A principal aim of the present invention is to solve the above described problem by providing a process and device that allows to prepare filter paper, for hot-welded infusion bags that are suitable to ensure optimum infusion and use untreated environment-friendly paper, which has a limited weight per square meter (even less than 12 grams) and relatively low costs.

Within the scope of this aim, an object of the present invention is to provide a process and device for preparing filter paper for infusion bags which is simple in concept, safely reliable in operation and versatile in use.

With this aim and this object in view, thre is provided, according to the present invention, a process for preparing filter paper to produce bags for infusion products, which is characterized in that it entails the application, on a ribbon of filter paper in its natural state, of a coating layer of thermoplastic material which is localized on a grid-like portion suitable to surround individual regions of untreated paper which correspond to containment chambers for respective doses of infusion product.

According to the invention, there is also provided a device which is characterized in that it comprises a coating unit which is suitable to apply, on a ribbon of filter paper, a coating layer of thermoplastic material which is localized on a grid-like portion that is suitable to surround individual regions of untreated paper which correspond to containment chambers for respective doses of infusion product.

The details of the invention will become apparent from the following detailed description of a preferred embodiment of the process and device for preparing filter paper to produce bags for infusion products, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic side view of the device according to the invention;

figure 2 is a schematic side view of a different embodiment of the device;

figures 3, 4 and 5 are respective plan views of a ribbon of filter paper provided with said localized layer of coating material;

figures 6, 7 and 8 are views of respective bags obtained with the process and device according to the invention.

With particular reference to the above figures, the reference numeral 1 designates the ribbon of filter paper suitable to produce bags for infusion products. Preferably, the paper is in its natural state, i.e. essentially it is not bleached. The paper may have a weight per square meter of less than 12 grams.

The paper ribbon 1 unwinds from a reel, not shown, and is fed in a known manner to a coating unit which is suitable to apply a localized layer 3 of thermoplastic material onto said ribbon and is generally designated by the reference numeral 2 in figure 1.

The unit 2 has a distribution roller 4 to which the coating material is fed; the coating material is contained in a tank 5 and is conveniently constituted by a non-toxic food-compatible thermoplastic transparent lacquer.

The distribution roller 4 acts on a counter-rotating pattern roller 6 which in turn supplies lacquer to an application roller 7. The paper ribbon 1 is caused to advance between said applicator roller 7 and a counter-rotating contrast roller 8.

The coating layer 3 of thermoplastic material is spread on a central band 1a of the paper ribbon 1 so as to delimit, in an outward direction, lateral bands 1b which are suitable to be folded symmetri-

cally onto said central band 1a. Each one of the folded lateral bands 1b covers a longitudinal half of the central band 1a.

As clearly shown in figures 3, 4 and 5, the coating layer 3 is localized on a grid-like portion which is suitable to surround individual regions 9 of untreated paper which, during the forming of the bags, correspond to the containment chambers for respective doses of infusion product.

In the solution shown in figure 4, the untreated regions 9 are connected in pairs, along axes which are transverse to the extension of the ribbon 1, by channels 10 which are equally untreated. The channels 10 are meant to connect the chambers formed by said regions 9.

Naturally, the shape of the untreated regions 9, and correspondingly the shape of the bags themselves, may be different from those shown in the above mentioned figures; for example, it may be circular or the like.

As an alternative, the coating unit may be constituted by a sprayer 11 connected to an appropriate tank of thermoplastic lacquer (see figure 2). Spraying the thermoplastic lacquer is limited to the localized portion 3.

The filter paper of the type shown in figure 3 is suitable to produce single-chamber bags, such as those shown in figures 6 and 7, which differ due to the presence, in the second type of bag, of a suspension cord 12 which has a label 13 at its free end.

From what has been shown, the fact is evident that the portion provided with thermoplastic lacquer, designated by the reference numeral 30 for greater clarity, forms the annular rim of the bag which, after heat-welding of the folded flap formed by the lateral band 1b, is thus closed tight; the dashed line 20 designates said flap of the bag. Said rim 30 surrounds the region 9 of untreated paper that forms the chamber containing the dose 14 of the product.

The filter paper of the type shown in figures 4 and 5 is instead suitable to produce two-chamber bags, such as the one shown in figure 8. Conveniently, these bags have, at the folding line of the two chambers, a sort of bellows which is obtained by folding a median band 1c of the paper ribbon 1.

The described process thus allows to prepare, with a simplified device, filter paper which is ideally suitable for the production of bags for infusion products. Said filter paper in fact has a thermoplastic coating which is localized only in the region reserved for heat-welding, whereas it is untreated, to provide better infusion of the product, at the chamber that contains said product.

Localization of the thermoplastic coating furthermore allows to produce filter bags that have a lower weight than conventional filter bags made of uniformly coated paper.

The fact should also be stressed that, since this process can be performed with a simplified device, it allows the manufacturing companies themselves to prepare the suitable filter paper, avoiding supply problems and the like.

In the practical execution of the invention, the materials employed, as well as the shapes and dimensions, may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

## Claims

1. Process for preparing filter paper to produce bags for infusion products, characterized in that it entails the application, on a ribbon (1) of filter paper in its natural state, of a coating layer (3) of thermoplastic material which is localized on a grid-like portion suitable to surround individual regions (9) of untreated paper which correspond to containment chambers for respective doses of infusion product.

2. Device for preparing filter paper to produce bags for infusion products, characterized in that it comprises a coating unit (2;11) which is suitable to apply, on a ribbon (1) of filter paper, a coating layer (3) of thermoplastic material which is localized on a grid-like portion that is suitable to surround individual regions (9) of untreated paper which correspond to containment chambers for respective doses of infusion product.

3. Device according to claim 2, characterized in that said coating unit (2) has first roller means (4,6) for distributing said coating material to second roller means (7,8) for applying said layer, said second roller means being rotated in contact with said ribbon of filter paper.

4. Device according to claim 2, characterized in that said coating unit has a sprayer (11) for spraying said thermoplastic material onto said ribbon of filter paper.

FIG.1

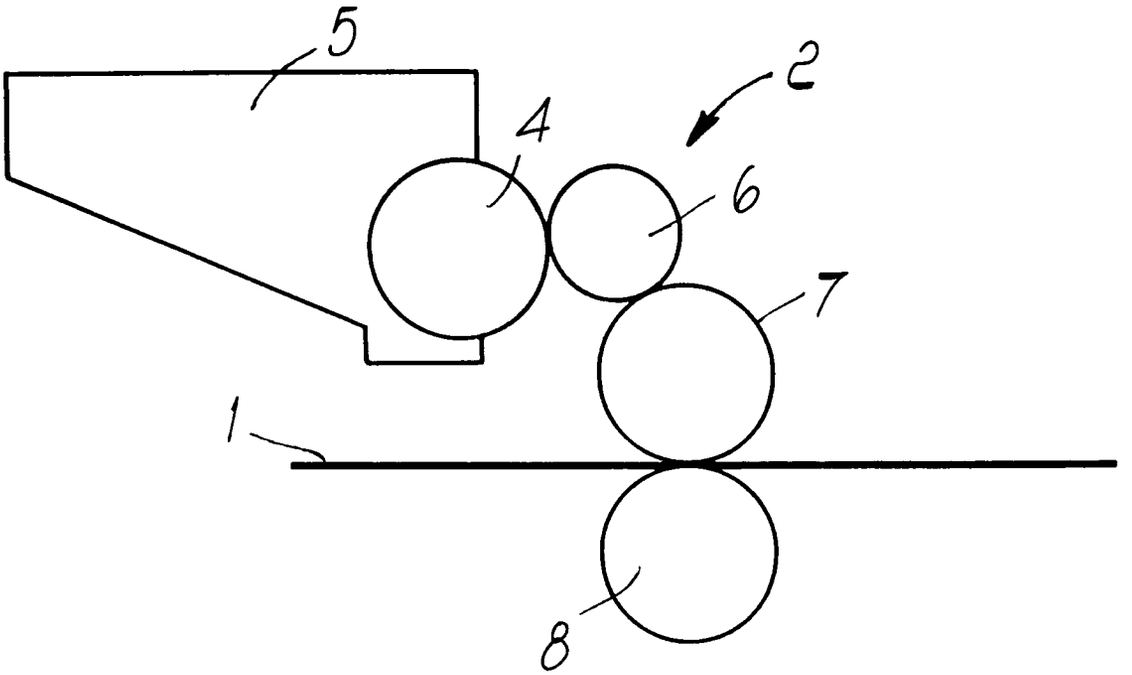



FIG.2

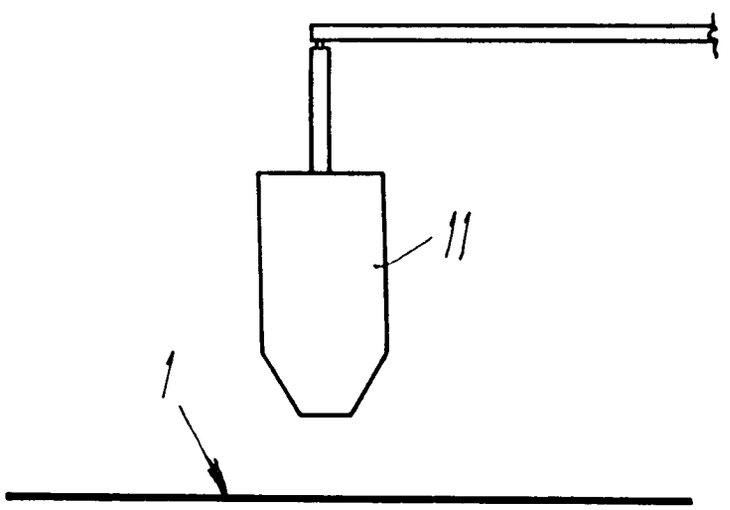


FIG.4

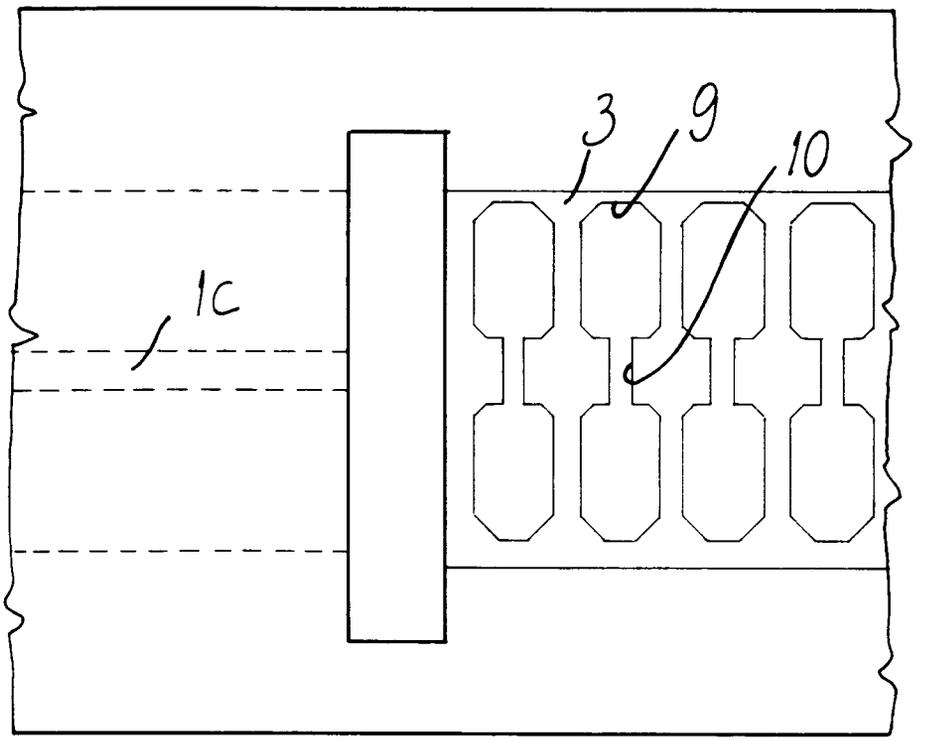



FIG.3

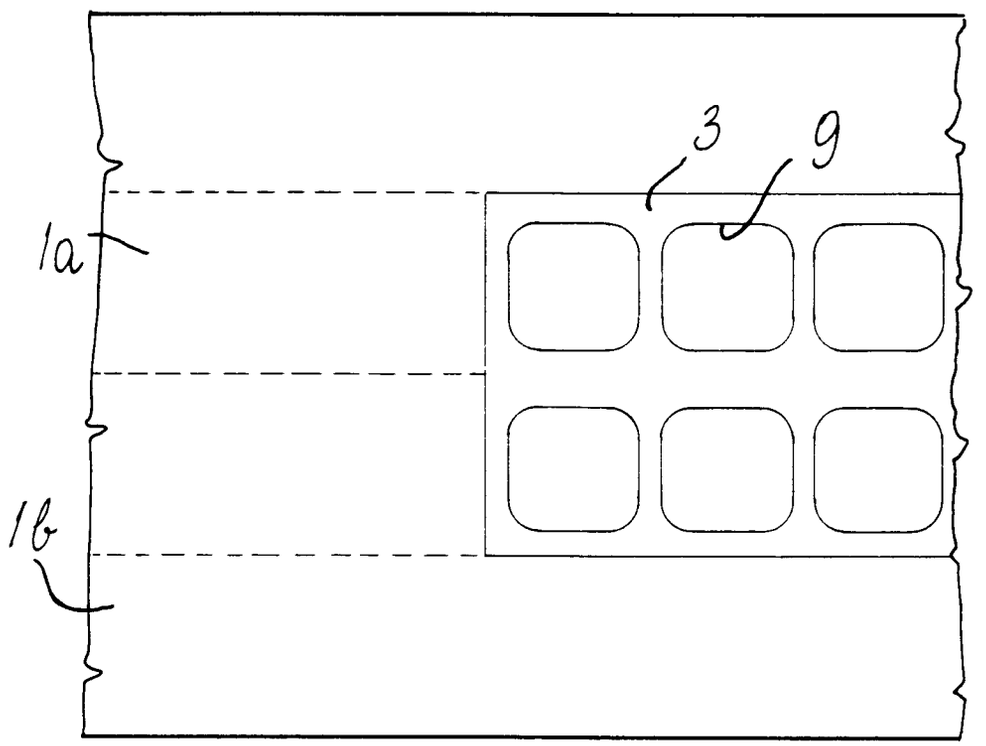
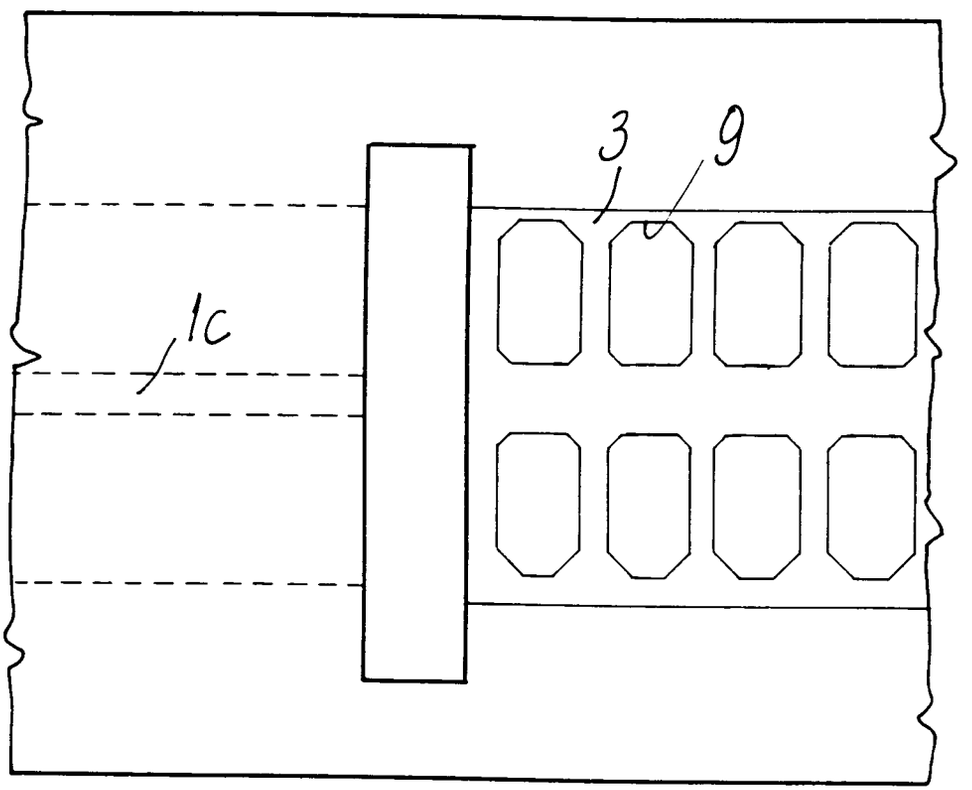


FIG.5



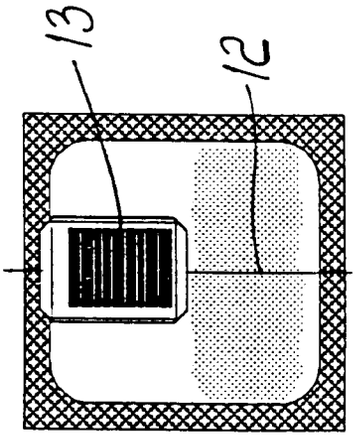



FIG.7

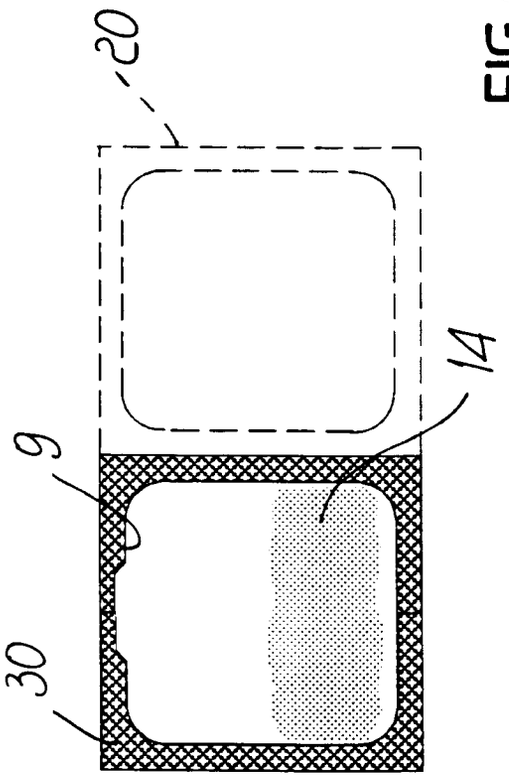



FIG.6

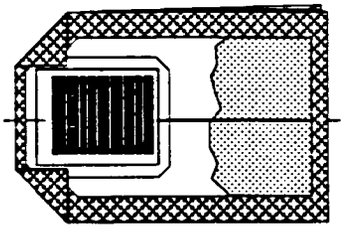


FIG.8

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 94 10 0932

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.Cl.5) |
|---|---|---|---|
| A | US-A-2 407 549 (GURWICK)<br>* the whole document *<br>--- | 1-4 | D21H27/08<br>D21H19/66 |
| A | US-A-4 415 597 (ROMAGNOLI)<br>* the whole document *<br>--- | 1-4 | |
| A | DATABASE PAPERCHEM<br>THE INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY, ATLANTA, GA, US<br>AN 54-03243<br>YAMASHITA, M. ET AL 'Material for Tea Bag'<br>* abstract *<br>& JAP. PAT. KOKAI 149,598/82. SEPT. 16, 1982<br>--- | 1-4 | |
| A | DD-A-240 226 (VEB POLYPACK DRESDEN)<br>* the whole document *<br>----- | 1-4 | |

TECHNICAL FIELDS SEARCHED (Int.Cl.5)

D21H

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 19 April 1994 | Songy, O |

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)