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SUPERINTENDENCIA

Organizacion CSA Ltda

Delegatura de Propiedad Industrial
División de Nuevas Creaciones

SOLICITUD
PATENTE DE INVENCION



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05-42332

54. TITULO

PROCEDIMIENTO Y DISPOSITIVO PARA LA PREPARACION DE BEBIDAS

A PARTIR DE PRODUCTOS SOLUBLES

51. CLASIFICACION INTERNACIONAL

71. SOLICITANTE

TUTTOESPRESSO S.P.A.

DOMICILIO

Coronno-Pertusella, Italia.

74. APODERADO

EMILIO FERRERO

C.C. 438,019 de Usaquén,

22. BOGOTA, D.C.,

86

**Industria y Comercio**

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**FORMULARIO UNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL**

1

SOLICITUD DE:



Patente de Invención.



Patente de Modelo de Utilidad.



Capítulo I.



Capítulo II.

2

**SOLICITANTE
(71)**Nombre: **TUTTOESPRESSO S.P.A.**sociedad constituida y existente bajo las leyes
de ItaliaDirección: Via Trieste, 49,
I- 21042 Caronno Pertusella (VA),
Italia

Domicilio: Caronno- Pertusella, Italia

IDENTIFICACIONC.C. ☐ NIT ☐C.E. ☐ Otro ☐

Cual _____ Número: _____

3

**REPRESENTANTE
O APODERADO**Nombre: **EMILIO FERRERO**

Dirección: Carrera 4ª. No. 72-35

Teléfono: 347 36 11

Fax:: 217 92 11

E-mail: clientes@camyp.com.

Domicilio: Bogotá, Colombia.

IDENTIFICACIONC.C. ☒ NIT ☐C.E. ☐ Otro ☐Cual _____
Número: 438.019 T.P. 31.929

4

**INVENTOR (ES)
(72)**Luca **DOGLIONI MAJER**Via Dei Cristoforis, 14,
I- 22010 Carate Urio (COMO),
Italia

5

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6

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A PARTIR DE PRODUCTOS SOLUBLES**

7

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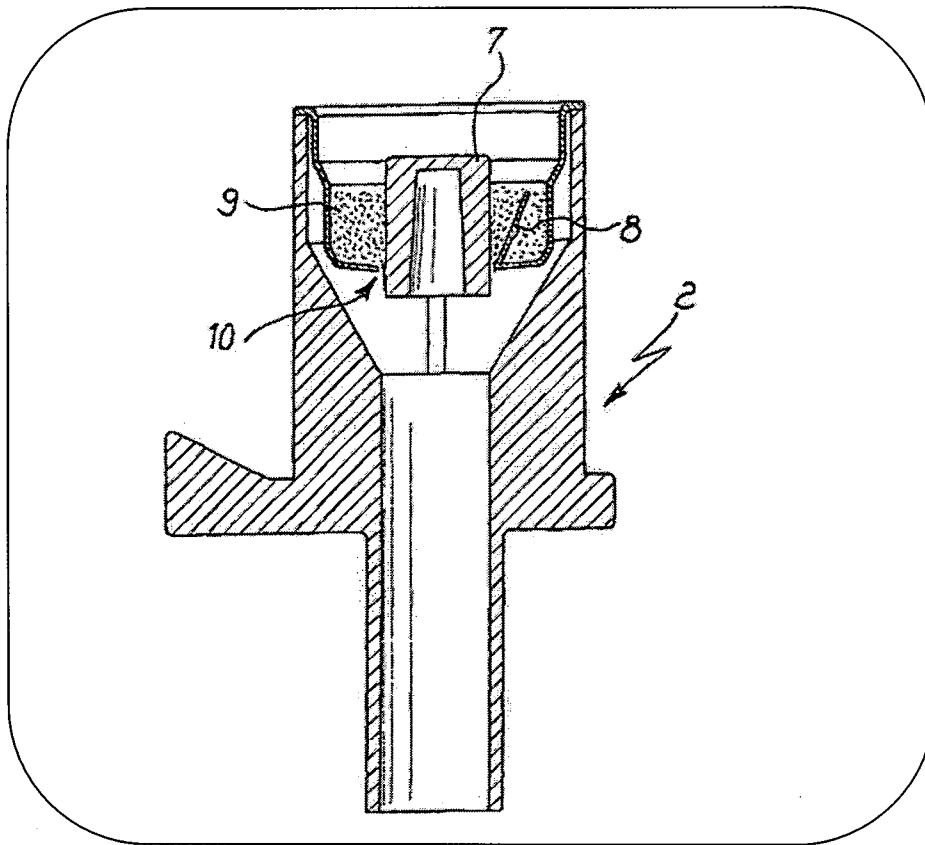
Comprobante de pago No.: 05 - 29,752Fecha: 25 de abril de 2005

10

Anexos:

- ☒ Comprobante de pago de la tasa de presentación de la solicitud por \$ 443.000.00.
- ☐ Comprobante de pago por reivindicación de prioridad.
- ☒ Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica.
- ☒ Poderes, si fuere el caso.
- ☐ Documento de cesión del inventor al solicitante o a su causante.
- ☐ Declaraciones.
- ☒ Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Copia del examen preliminar efectuado por la IPEA.
- ☒ Traducción del examen preliminar efectuado por la IPEA.
- ☐ De ser el caso, copia del contrato de acceso.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- ☐ De ser el caso, certificado de depósito del material biológico.
- ☒ Arte final 12x12
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud.
- ☐ Otros

11

FIGURA CARACTERISTICA:

12

Solicito la concesión de la patente,

NOMBRE: EMILIO FERREROFIRMA: *Emilio Ferrero*

C.C. 438.019 de Usaquén T.P. 31.929

DLM

Representación y Poder con autenticación notarial y Apostille para patentes, modelos de utilidad, diseños industriales, marcas de fábrica, nombres comerciales, enseññas, nombres de dominio, lemas comerciales, licencias.

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REPRESENTACION Y PODER

REPRESENTATION AND POWER- OF- ATTORNEY

Yo (nosotros), abajo firmado (s)/I (we), the undersigned

TUTTOESPRESSO S.p.A.

domiciliado (s) en/of 49, Via Trieste

21 042 CARONNO PERTUSELLA (VA) - Italy

14575
5029

por el presente nombramos a EMILIO FERRERO, tpa. 31929; GONZALO PERDOMO, tpa. 831; LUZ CLEMENCIA DE PAEZ, tpa. 3555 y GERMAN CAVELIER, tpa. 832, domiciliados en la Carrera 4ª N° 72-35, Bogotá, Colombia, en obediencia a lo dispuesto en el artículo 543 del Código de Comercio, el primero como principal y los demás como suplentes, en su orden, como mis (nuestros) representantes en todos los asuntos de propiedad industrial con facultad para recibir notificaciones y nombrar apoderados judiciales o extrajudiciales. El primer representante suplente reemplazará al principal en caso de ausencia o impedimento temporal o definitivo de aquél. La misma regla se aplicará cuando el segundo representante suplente haya de reemplazar al primero, o el tercero al segundo. En tales casos, el representante principal, o el primero, o segundo suplente, en su caso, o ambos, declararán su intención de no ejercer la representación mediante declaración autenticada por Notario Público en Colombia, o por Notario u otro Funcionario Público, o Cónsul de Colombia, en el extranjero; y si se tratare de impedimento, con el certificado respectivo. Si alguno de los nombrados faltare definitivamente, el siguiente tomará su lugar. Cuando cesare la ausencia o impedimento del representante principal, o de su primero o segundo suplentes, en su caso, podrán ejercer la representación, en su orden, uno u otros según el caso, cesando por el solo hecho de ejercerla, cesando en ese momento el ejercicio de la representación por el primero, segundo o tercer suplente en su caso.

Además, confiero (conferimos) poder a los abogados arriba nombrados, para obtener la protección de mi (nuestra) propiedad industrial y contra la competencia desleal, a cuyo efecto autorizo (amos) a los dichos apoderados para que me (nos) representen ante cualesquiera entidades o personas, ejerzan o no jurisdicción, especialmente ante las del orden administrativo, contencioso-administrativo y judicial, así como los tribunales de arbitramento, en todo lo concerniente a los siguientes asuntos: a) Obtención de patentes de invención, modelos de utilidad, y diseños industriales; el registro de marcas de fábrica, colectivas, defensivas, de servicio, lemas comerciales, nombres comerciales, enseññas, nombres de dominio, variedades vegetales y denominaciones de origen; su renovación, traspaso, cambio de nombre o domicilio, cancelación voluntaria; y el registro de licencias de uso de esos derechos; b) Las acciones de competencia desleal, protección del consumidor, oposiciones u observaciones, cancelación administrativa y judicial, nulidad, medidas cautelares, concesión de licencias, la tutela, la protección de secretos industriales, y en general los juicios civiles, penales, administrativos o contencioso-administrativos relacionados

in due compliance with the terms of paragraph 1st. of article 543 of the Commercial Code, do hereby appoint EMILIO FERRERO, tpa. 31929; GONZALO PERDOMO, tpa. 831; LUZ CLEMENCIA DE PAEZ, tpa. 23555 and GERMAN CAVELIER, tpa. 832, domiciled at Carrera 4ª N° 72-35, Bogotá, Colombia, the first as principal and the others as alternates, in the order of their appointment, as our representatives for all industrial property matters with faculty to receive notifications and to appoint attorneys in and out of Court. The first alternate shall replace the principal in case of his absence or of temporal or definitive impediment. The same rule will apply when the second alternate representative is to replace the first one, or when the third is to replace the first or second alternates in their turn, or both of them, second. In such cases, the principal representative, or the first or second alternates in their turn, or both of them, shall state their intention not to act as representatives through a declaration given before a Notary Public in Colombia, or before a Notary or another Public Official or a Colombian Consul abroad; and in case of impediment, the appropriate certificate shall suffice. If any of the appointees were to be definitely absent, the following alternate shall take his place. When the absence or impediment of the principal representative or of the first or second alternate in their turn ceases, the representation can be taken again in their sequence, by the principal, the first or second alternate depending on case, and the mere fact of its exercise will suffice. The exercise of the representation by the first, second or third alternates in their turn shall end at such time.

In addition, we grant a Power of Attorney in favor of the above-named attorneys-at-law so that they may obtain the protection of my (our) industrial property and against the unfair competition, for which purpose I (we) authorize the said attorneys to represent me (us) before any authorities or persons, with or without jurisdiction, specially those administrative, administrative contentious and judicial, as well as before Arbitration Court, in all matters concerning the following: a) Obtainment of patents, utility models and industrial designs; the registration of trademarks, collective, defensive and service marks, slogans, commercial names, trade emblems, domain names, vegetal varieties and denominations of origin; its renewal, assignment, change of name or domicile, voluntary cancellation; and the registration of licenses of use of the above rights; b) Actions of unfair competition, protection to the consumer, oppositions or observations, administrative or Court cancellation, nullity, infringement, granting of licenses, the action for writ mandamus, the protection of trade secrets, and in general the civil, penal, and administrative suits relating to those rights; actions and suits instituted by me (us) or against me (us). And that in all the above

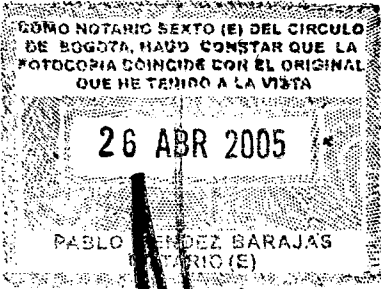
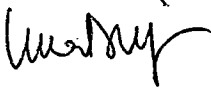
con estos derechos; acciones y procesos que promovamos o se nos promuevan. Y para que en todos los asuntos arriba determinados, puedan sustituir este mandato, transigir, conciliar, admitir los hechos del proceso, desistir, cancelar, recibir, renunciar, y ratificar los actos de agentes oficiosos.

matters they may substitute this Power of Attorney, compromise, conciliate, admit the facts of the case, desist, cancel, receive, resign, and ratify acts done by representatives without a power of attorney.

Dado y firmado hoy/Given and signed this MARCH 9th 2005
en/in MILANO - ITALY
por/by LUCA DOGLIONI MAJER

Firma

Signature



CERTIFICACION NOTARIAL (SOCIEDAD)

El infrascrito Notario Certifica: Que la firma que antecede de

es auténtica; que el signatario desempeña actualmente el cargo de _____

de la compañía _____,

sociedad que actualmente existe y está organizada de acuerdo a las leyes de _____,

que la dirección de dicha compañía es _____

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Todos los hechos anteriores le constan por haber examinado 'os documentos respectivos y de todo ello da fe.

Dado y firmado en _____

El _____

NOTARIAL CERTIFICATION (COMPANY)

The undersigned Notary certifies: That the preceding signature of

LUCA DOGLIONI MAJER

is authentic, that the signatory currently acts in the position of

PRESIDENT OF THE BOARD OF DIRECTORS

of the company TUTTOESPRESSO S.P.A.

a company currently existing and organized under the laws of

ITALY

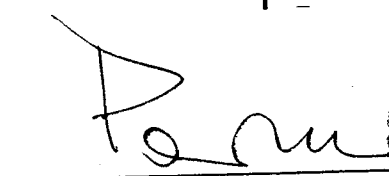
that the address is 49, VIA TRIESTE
21042 CARONNO PERTUSELLA
(VA) - ITALY

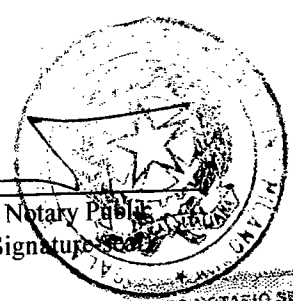
and that the signatory has the power to grant this document.

The Notary Public is aware and attests to the above facts upon examination of the corresponding documents.

Given and signed in MILAN (ITALY)

On MARCH 9th 2005


El Notario Público
(Firma-sello)


The Notary Public
(Signature)

COMO NOTARIO SEXTO (E) DEL CIRCUITO DE BOGOTA, HAGO CONSTAR QUE LA FOTOCOPIA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA

26 ABR 2005



APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: _____
2. This public document has been signed by _____
3. acting in the capacity of _____
4. bears the seal/stamp of _____

Certified

5. at _____
6. the _____
7. by _____
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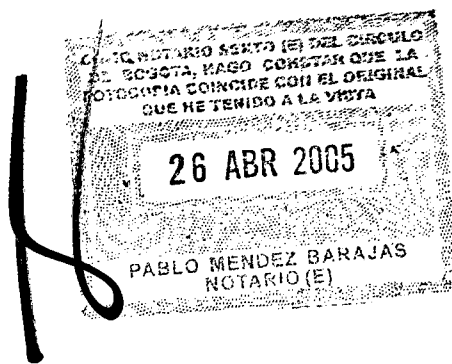
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TRADUCCIÓN OFICIAL No. 1033H, correspondiente a la apostilla que aparece en el documento de representación y poder otorgado por TUTTOESPRESSO S.p.A., con domicilio en 49, Via Trieste – 21042 CARONNO PERTUSELLA (VA)- Italia; a Emilio Ferrero, tpa. 31.929. Gonzalo Perdomo, tpa. 831, Luz Clemencia de Páez, tpa. 23.555 y Germán Cavelier, tpa. 832, domiciliados en la Cra. 4 No. 72-35, Bogotá, Colombia; realizada por SANDRA MÓNICA BARRIGA BALMA traductora Oficial para los idiomas Español – Italiano - Español, RES. No. 735 del 20 de SEPTIEMBRE DE 2001 DEL MINISTERIO DEL INTERIOR Y DE JUSTICIA.

APOSTILLA

(Convención de la Haya del 05 de Octubre de 1961)

PAÍS: ITALIA

EL PRESENTE ACTO PÚBLICO

FUE SUSCRITO POR (Ilegible SALA)

ACTUANDO EN CALIDAD DE NOTARIO DE MILÁN

LLEVA LA CONTRASEÑA/SELLO DE NOTARIO DE MILÁN

CERTIFICADO

EN MILAN, EL 10 DE MARZO DE 2005

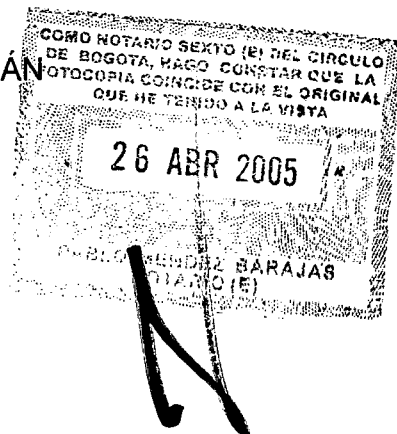
POR EL MINISTERIO PÚBLICO

BAJO EL NÚMERO 2685 AP

CONTRASEÑA/SELLO DE ESTADO

FIRMADO POR EL PROCURADOR DE LA REPUBLICA, DRA. ADA RIZZI

SELLO REDONDO DE LA PROCURADURÍA DE LA REPUBLICA EN MILÁN EN EL TRIBUNAL ORDINARIO.



SANDRA MONICA BARRIGA B
Traductora e Intérprete Oficial
Español - Italiano - Español
Res. Minjusticia 735
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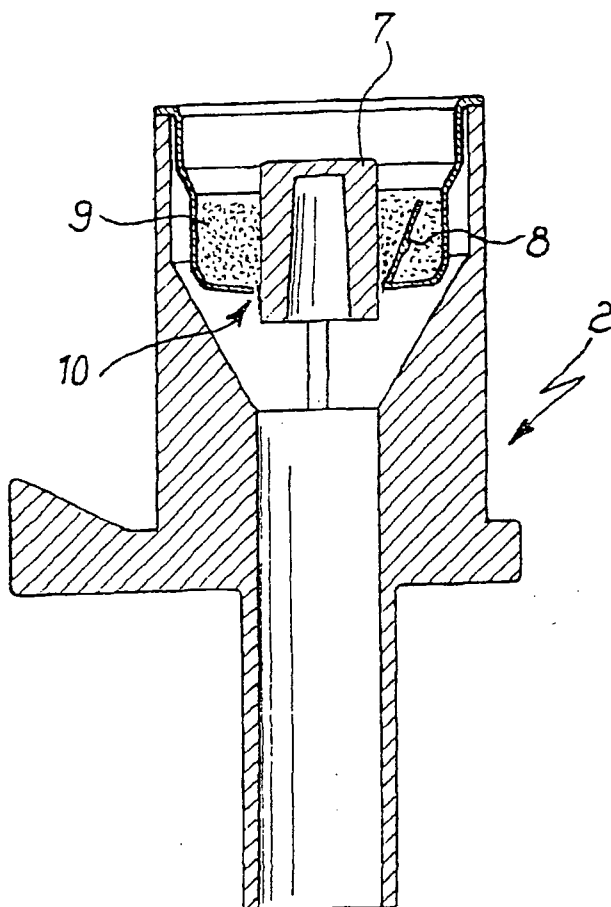
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- (71) Applicant (for all designated States except US): **TUTTOESPRESSO S.P.A.** [IT/IT]; Via Trieste, 49, I-21042 Caronno Petrusella (IT).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **MAJER DOGLIONI**, Luca [IT/IT]; Via Dei Cristoforis, 14, I-22010 Carate Urio (IT).
- (74) Agent: **GISLON, Gabriele**; Marietti, Gislon & Trupiano S.r.l., Via Larga, 16, I-20122 Milan (IT).
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[Continued on next page]

(54) Title: A PROCESS AND A DEVICE FOR PREPARING BEVERAGES FROM SOLUBLE PRODUCTS



(57) Abstract: A method and a device are described for the preparation of a beverage from a soluble product contained in a disposable cartridge, based on the regulation of the dispensing of the beverage in such way that the soluble product is delivered in suspension for at least 75% of the total dispensing time. According to one embodiment said device comprises of the outlet opening of the cartridge (1).

WO 2004/030499 A1

Title: "A PROCESS AND A DEVICE FOR PREPARING BEVERAGES FROM SOLUBLE PRODUCTS"

TECHNICAL FIELD OF THE INVENTION

The present invention relates to a device and a method for the preparation of beverages from soluble products contained in disposable cartridges. In particular, the invention relates to the preparation of beverages carried out in machines provided with a collecting device designed to receive a cartridge of soluble product in order to produce hot beverages such as coffee, cappuccino, tea or the like.

BACKGROUND ART

In known machines, groups designed for the preparation and dispensing of beverages generally comprise a collecting device having a seat that receives a disposable cartridge.

Since the disposable cartridges are originally sealed to avoid spillage of the soluble product during handling, the collecting device is generally fitted with a piercing member that opens one or more outlet openings on a wall of the cartridge (for example, on the base wall of the same) in correspondence to a plurality of pre-established breaking lines.

Once the cartridge is inserted into the appropriate seat on the collecting device, hot water is admitted under pressure to the inside of the cartridge through one its entry ports in order to form a beverage consisting of a suspension or dispersion or solution in water of the soluble product, which beverage is delivered through an outlet opening or hole located on the cartridge.

A good dispensing group must guarantee complete and uniform solubilization or suspension/dispersion of the product in the fluid (usually water) inside the cartridge and good final appearance of the beverage; in the case of coffee and cappuccino good final appearance means being "creamy", i.e. having an appreciable amount of a layer of

enduring small-bubble froth. Obtaining such a result is complicated by the fact that the shape and dimensions of the cartridge are the same for all products dispensed, while the amount of soluble product in the cartridge varies dramatically from product to product (for example: 1.5
5 grams for espresso coffee and 15-16 grams of product for chocolate and cappuccino). This variation in amount can make difficult to obtain a homogeneously solubilized-suspended beverage. Another problem of known dispensing groups is guaranteeing thorough cleaning of the group; this requires avoiding the use of dispensing pipes and tubes with
10 section less than 2 mm, because of the risk of formation of coatings and residues in the same.

In a previous patent application, still pending and not published, in the name of the same Applicant, it is suggested to provide a throttling arrangement along the dispensing course of the beverage, with the aim
15 of improving the mixing of the soluble product with the water admitted to the cartridge and of creating a pressure gradient inside the cartridge so as to obtain a good quality beverage with attractive appearance on delivery. This has been achieved by means of a piercing member having a diameter greater than the diameter of the product outlet opening: the
20 pressure of the water on arrival in the cartridge determines solubilization and delivery of the beverage.

However, it has been found that the beverage obtained is not always optimum, in particular with respect to the amount and duration of cream produced.

25 SUMMARY OF THE INVENTION

The object of the present invention is therefore to produce a device and method for the preparation of beverages able to guarantee optimum and consistent results from the quality of beverage point of view.

This object is achieved by the present invention by means of a device for

the preparation of beverages according to Claim 1. Particular embodiments of the device according to the invention are reported in the dependent Claims from 2 to 15.

According to a first aspect of the present invention, the beverage preparation device comprises means of regulating the dispensing of the beverage in such way that the soluble product is delivered in suspension for at least 75% of the total dispensing time.

According to another aspect of the present invention, the means of regulation comprise one or more delivery ports or ducts between the piercing member and the cartridge outlet opening.

In a preferred embodiment, the delivery port has a substantially circular crown section, and the ratio R between the diameter of the outlet opening and the diameter of the section of engagement of the piercing member is $1 < R \leq 1.067$, preferably $1 < R \leq 1.04$, still more preferably $1 < R \leq 1.02$ and still more preferably $1 < R \leq 1.014$. For example: fixing the diameter D_2 of the piercing member at 15 mm, gives the diameter D_1 of the outlet opening in the cartridge as $15 < D_1 \leq 16$ mm, more preferably $15 < D_1 \leq 15.6$ mm, still more preferably $15 < D_1 \leq 15.3$ mm, and still more preferably $15 < D_1 \leq 15.2$ mm.

In another possible embodiment, adoptable as alternative to or in combination with the previous one, the means of regulation comprise one or more stop elements for limiting the deformation of a portion of the cartridge wall in proximity of the outlet opening.

Such stop elements could comprise for example: one or more supports of the piercing member; or a annular member having diameter greater than the outlet opening.

In the latter case, the annular member has a surface portion tilted towards the piercing member and towards the base wall of the cartridge, with inclination between 1° and 45° with respect to a

horizontal plane supported on the annular member, more preferably with inclination between 15° and 38° or still more preferably equal to 30° with respect to a horizontal plane supported on the annular member.

According with a second aspect of the present invention, a method for preparation of beverages as specified in Claim 16 is provided for. Further favourable characteristics of the method according to the invention are reported in the dependent Claims from 17 to 30.

The dispensing device according to the invention has numerous advantages. The reduced diameter dispensing openings that are formed between cartridge and piercing member during the beverage dispensing phase constitute a temporary throttling, i.e. a throttling that is eliminated at each delivery when the cartridge is removed, and that is newly created at the following delivery when a new cartridge is inserted into the collecting-piercing device. Further advantages are the homogenous and uniform solubilization/dispersion/suspension of the product and the production of a beverage with optimum appearance.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will become clearer from the following description which is given by way of example and is not limiting, with reference to the attached schematic drawings, in which:

- Figure 1 is a perspective view of a cartridge which can be used on a dispensing device according to the present invention;
- Figure 2 is a section view of the cartridge of fig. 1;
- Figure 3 is a perspective view of a collecting-piercing device;
- Figure 4 is a section view of the collecting-piercing device of fig. 3 with a cartridge inserted and perforated;
- Figure 5 is a section view of a further type of collecting-piercing device supplied with a deformation control ring;

- Figure 6 is a plan view of the collecting-piercing device of fig. 5;
- Figures 7 and 8 are a plan view and an enlarged view of two possible embodiments of the product outlet opening of the cartridge;
- Figure 9 is a view similar to that of figure 5 of further means of controlling deformation.

MODE FOR CARRYING OUT THE INVENTION

With reference to figures 1-3, the dispensing device according to the invention comprises a disposable cartridge 1 and a collecting-piercing device 2. The cartridge 1 is equipped with an upper surface with an opening 4 encircled by a flange 3, and by a lower base wall 5 on which a breaking line 5a is cut so that it defines an outlet for the solubilized product. The upper opening 4 is closed in a known way by a cover (not shown) provided with one or more inlet holes for the water of infusion, solubilization or dispersion-suspension. In a known way, the breaking line 5a consists of a linear curved portion of the base wall having reduced thickness and such that it can be easily broken by the piercing cylinder 7 of the collecting device 2; the line 5a is interrupted in correspondence to a portion 6 that constitutes a hinge for portion 8 of the base wall (referred to as "cover") defined by the line 5a and preventing the separation of the same from the rest of base wall 5 after the cartridge has been engaged on the collecting-piercing-device 2 (fig. 4).

In figure 4 a cartridge 1 is shown in dispensing position, i.e. in the position in which it has been engaged by cylinder 7, which has caused the opening of base wall 5 along the line 5a and the rotation of base portion 8 towards the inside of the cartridge, thus forming the corresponding opening. The soluble product to be delivered is outlined and indicated by 9.

According to the present invention the dimensions of the piercing cylinder 7 and of portion 8 of base wall 5 are such that when the

cartridge is inserted onto cylinder 7, before feeding hot water under pressure, there is at least one port or space 10 between the base wall 5 and piercing member 7 to allow the exit of the solubilized or dispersed or suspended product. The port 10 is preferably provided in the shape of a circular crown (fig. 7), i.e. a single port that extends substantially around the perimeter of the cylinder 7. However, other embodiments of the port are possible that allow for different shapes and/or the presence of more openings between base wall 5 and cylinder 7. By using an ellipsoidal line 5a it is possible to produce, for example, two or more openings: if the minor axis of the ellipse is equal or less than the diameter D2 of the cylinder 7 (fig. 8) two openings are obtained separated by two points of contact between the base opening and the cylinder 7, if the minor axis of the ellipse is longer than the diameter D2 a continuous non circular opening is obtained around the cylinder 7.

In general, the maximum difference between the line 5a which forms the edge of the opening on the base wall 5 and the wall of cylinder 7 is comprised in the interval between 0.4 and 1.5 mm and preferably 1.5 mm. In any case, the total area of opening is such as to permit the regulation of the delivery of the beverage so as to produce the simultaneous delivery of water and product for at least 75% of the water-dispensing time. This simultaneous dispensing can be checked visually by observing the colour of the liquid coming out from the cartridge outlet: if the liquid is little coloured or substantially uncoloured there is not simultaneous dispensing in the sense indicated above. In practice, it is found that the results are obtained also when the size of piercing and opening differ by very little (for example, when two circumferences are almost equal and differ by 0.01mm) as long as there are delivery ports 10, even if they are extremely small.

Therefore, an object of the invention is a soluble beverage dispensing

device of the type indicated above, in which the ratio between the area of piercing member 7 and the area defined by the breaking line 5a is comprised in the interval between 1.0 and 1.284, but excluding a ratio of 1.0, and with the maximum extent of the space between line 5a (edge of the opening on the base wall 5) and wall of piercing member 7 comprised in the interval between 0.4 mm and 1.5 mm. By area of piercing member 7 is intended the area of the section of piercing member 7 taken at the height of base wall 5 of cartridge 1 when this is housed in the collecting device 2.

10 In the following description, reference will be made to a preferred embodiment in which member 7 and the line 5a are both circular (fig. 7). In this embodiment, the port 10, i.e. the dispensing opening, is substantially crown-shaped in section and the ratio R between the diameter D1 of said delivery port 10 and the diameter D2 of piercing member 7 is comprised between 1.001 and 1.04, preferably between 1.001 and 1.02 and more preferably between 1.001 and 1.014.

As pointed out above, cartridge 1 is generally made of plastic material, for example ethylene or propylene homo- or co-polymer suitable for use with foodstuffs. A preferred material has crystallinity higher than 70% and such a percentage of amorphous polymer as to give visco-elastic deformation to the base wall of the cartridge during the feeding under pressure of hot water. The term "visco-elastic deformation" means that deformation of the material of the base wall, at least in an area around of the edge of the opening on base wall 5 along the line 5a, is reduced or quite eliminated either by the end of the dispensing or in one or more phases during the dispensing. In other words, during all the phase of dispensing of the beverage, the material of the base wall, at least in said surround of the outlet opening, opposes the deformation caused by the water or other liquid being fed under pressure into the cartridge; in this

15

way, the extent of the deformation and therefore of the dimensions of the delivery port 10 are controlled during the dispensing of the beverage. The material moulding techniques will be chosen so as to conserve as much as possible the percentage of amorphous polymer in the end product. Suitable materials are chosen from (co)polymers of ethylene and propylene, for example (co)polymers of propylene comprising one or more alpha-olefines having 2-10 Carbon atoms, for example ethylene, 1-butene, 1-pentene, 4-methyl-1-pentene, 1-hexene, 1-octene; propylene formulations obtained by sequential polymerization of propylene and its mixtures with ethylene and/or alpha-olefines. The (co)polymers generally have Melt Flow Index between 0.2 and 60 at 230°C/21.6 N.

However, cartridges can be used which undergo plastic deformation of the base wall following feeding under pressure of hot water. In this case the visco-elastic effect described above of opposition to the deformation by the material itself will not occur and "mechanical means" are used in order to limit the extent of the deformation of the base wall. Figures 5 and 6 show a preferred embodiment of such means, constituted by a ring 12 arranged concentrically with piercing cylinder 7 and distanced from it. Ring 12 is supported on three fins 11 and preferably has a surface portion 13 tilted towards cylinder 7, i.e. towards the inside of device 2, and towards the base wall. The inclination of the upper surface portion 13 is therefore comprised in the interval between 1° and 45°, preferably between 15° and 38° and more preferably 30 ° to the horizontal.

As an alternative to ring 12, radial fins 11a can be used (fig. 9) that extend to the height of surface 13 of ring 12 and that have a portion of their upper surface shaped in similar way to the slanted surface 13 of the ring and similarly distanced from member 7.

Therefore an object of the invention is a dispensing device of the type described above, in which there are provided means of controlling the deformation of the base wall of the cartridge of the distribution of the beverage. Such means are constituted by a polymer construction material of the cartridge that introduces substantially visco-elastic deformation and/or by mechanical means of support such as a ring or support fins of the base wall. In both cases the extent of the deformation angle of the material surrounding the edge 5a of the product delivery opening is maintained within an interval between 0° and 45°, preferably between 15° and 38° and more preferably around to the 30° during the dispensing of the beverage.

The invention will now be further described with reference to the following examples given purely by way of illustration.

Example.

Group 1. Ten (10) coffees were dispensed from a Tuttoespresso hot-beverage dispensing machine with a collecting device fitted with a piercing cylinder of diameter (D2) of 14.7 mm and diameter of the cartridge opening (D1) of 15 mm. The cartridge used is made of ethylene co-polymer with substantially visco-elastic deformation of the base wall.

Group 2. Another ten (10) coffees were dispensed with similar cartridges, but made of ethylene co-polymer with higher crystalline content and plastic deformation of the cartridge base wall. The collecting device has a support ring inclined at 30 degrees to the inside and base of the said device.

Group 3. For comparison ten (10) coffees were dispensed under the same conditions and from the same machine using traditional cartridges and collecting device.

The assessment was carried out by measuring the volume (cc) of cream



obtained. The results show an average of 12.8 cc of cream for each coffee dispensed in Group 1, an average of 9.6 cc of cream for the coffees dispensed in the Group 2 and an average of 6.8 cc of cream for each coffee dispensed in Group 3 (traditional).



CLAIMS

1. Device for the preparation of a beverage from a soluble product, of the type comprising a collecting device having a seat suitable to receive a disposable cartridge containing the soluble product, said
5 cartridge comprising at least one outlet opening for the delivery of a beverage consisting of said soluble product and a fluid, wherein said at least one outlet opening is defined by at least one breaking line present on a wall of said cartridge and wherein said collecting device comprises at least one piercing member to pierce said cartridge in
10 correspondence to said breaking line, characterised by comprising means of regulation of the delivery of said beverage in such a way that said soluble product is delivered for at least 75% of the total dispensing time.
2. A device according to Claim 1, wherein said means of regulation
15 comprise at least one delivery port between the wall of said piercing member and the edge of said outlet opening.
3. A device according to Claim 1 or 2, wherein said at least one engagement portion of said piercing member is substantially cylindrical in shape with circular section and wherein said outlet opening is
20 substantially circular in shape.
4. A device according to Claim 2 or 3, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$,
25 preferably $1 < R \leq 1.04$ and more preferably $1 \leq R \leq 1.02$.
5. Device for the preparation of a beverage from a soluble product, of the type comprising a collecting device having a seat suitable to receive a disposable cartridge containing the soluble product, said cartridge comprising at least one outlet opening for the delivery of a

beverage consisting of said soluble product and a fluid, wherein said at least one outlet opening is defined by at least one breaking line present on a wall of said cartridge and wherein said collecting device comprises at least one piercing member to pierce said cartridge in
5 correspondence to said breaking line in order to form at least one delivery port of the beverage, characterised by comprising means for controlling the deformation of the cartridge base wall during the dispensing phase of said beverage.

6. A device according to Claim 5, wherein the section of said
10 delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$, preferably $1 < R \leq 1.04$ and more preferably $1 \leq R \leq 1.02$.

7. A device according to Claim 2 or 6, wherein the section of said
15 delivery port is substantially circular crown-shaped, and wherein ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member and is $1 < R \leq 1.014$.

8. A device according to Claim 1 or 5, wherein said means of regulation comprise one or more stop elements for limiting the
20 deformation of a portion of the wall of said cartridge in proximity of said outlet opening.

9. A device according to Claim 1 or 5, wherein said means comprise at least one portion of the base wall of said cartridge being made of plastic material with visco-elastic behaviour.

25 10. A device according to Claim 8, wherein said one or more stop elements comprise one or more fins which support said piercing member.

11. A device according to Claim 8 or 10, wherein said one or more stop elements comprise at least one annular member having diameter

greater than said outlet opening.

12. A device according to Claim 11, wherein said annular member presents a surface portion tilted towards the base wall of said cartridge.

13. A device according to Claim 12, wherein said tilted surface portion
5 has an inclination between 0° and 45° with respect to a horizontal plane supported on said annular member.

14. A device according to Claim 12, wherein said tilted surface portion has an inclination between 15° and 35° with respect to a horizontal plane supported on said annular member.

10 15. A device according to Claim 12, wherein said tilted surface portion has an inclination of 30° with respect to a horizontal plane supported on said annular member.

16. Method for the preparation of a beverage from a soluble product contained in a disposable cartridge, wherein said cartridge is lodged in
15 the seat of a collecting device having at least one piercing member in order to open an outlet opening from said cartridge, said opening being defined by at least one breaking line present on a wall of said cartridge and wherein entry of a fluid into said cartridge is provided for through an entry port of the same in order to obtain the dispensing of a beverage
20 consisting of said soluble product and said fluid, characterised by providing regulation of the dispensing of said beverage so that said soluble product is delivered for at least 75% of the total dispensing time.

17. A method according to Claim 16, wherein the regulation of the dispensing is carried out by means of at least one delivery port between
25 the wall of said piercing member and the edge of said outlet opening.

18. A method according to Claim 16 or 17, wherein said at least one engagement portion of said piercing member is substantially cylindrical in shape with circular section and wherein said outlet opening is substantially circular in shape.

19. A method according to Claim 17 or 18, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$.
- 5 20. A method according to Claim 17 or 18, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.04$.
21. A method according to Claim 17 or 18, wherein the section of said
10 delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.02$.
22. A method according to Claim 17 or 18, wherein the section of said
15 delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.014$.
23. A method according to Claim 16, wherein regulation of dispensing is carried out by means of one or more stop elements in order to limit the deformation of a portion of wall of said cartridge in proximity of said
20 outlet opening.
24. A method according to Claim 16, wherein said outlet opening is cut into the base wall of said cartridge.
25. A method according to Claim 23 or 24, wherein said one or more stop elements comprise one or more fins supporting said piercing
25 member.
26. A method according to Claim 23 or 24, wherein said one or more stop elements comprise one or more annular members having diameter greater than said outlet opening.
27. A method according to Claim 26, wherein said annular member

has a surface portion tilted towards the base wall of said cartridge.

28. A method according to Claim 27, wherein said tilted surface portion has an inclination between 0° and 45° with respect to a horizontal plane supported on said annular member.

5 29. A method according to Claim 27, wherein said tilted surface portion has an inclination between 15° and 35° and preferably 30° with respect to a horizontal plane supported on said annular member.

30. A method according to Claim 16, characterised by controlling said deformation by means of the use of plastic material with visco-elastic
10 behaviour for the production of said cartridge.

31. Disposable cartridge for the preparation of a beverage from a soluble product in a device for beverage preparation according to any of Claims 1 to 15 or by the performing a method according to any of Claims 16 to 30.

Fig.1

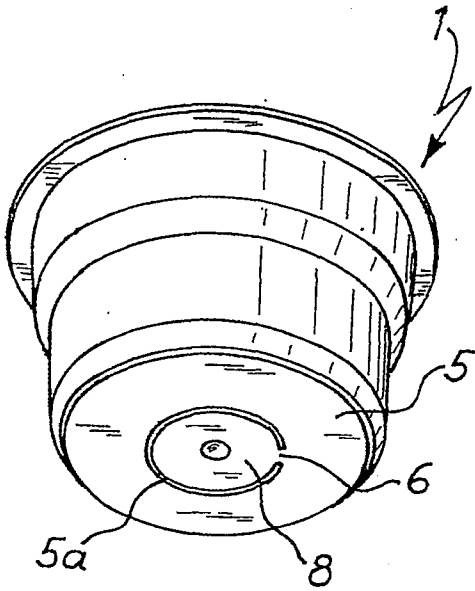


Fig.2

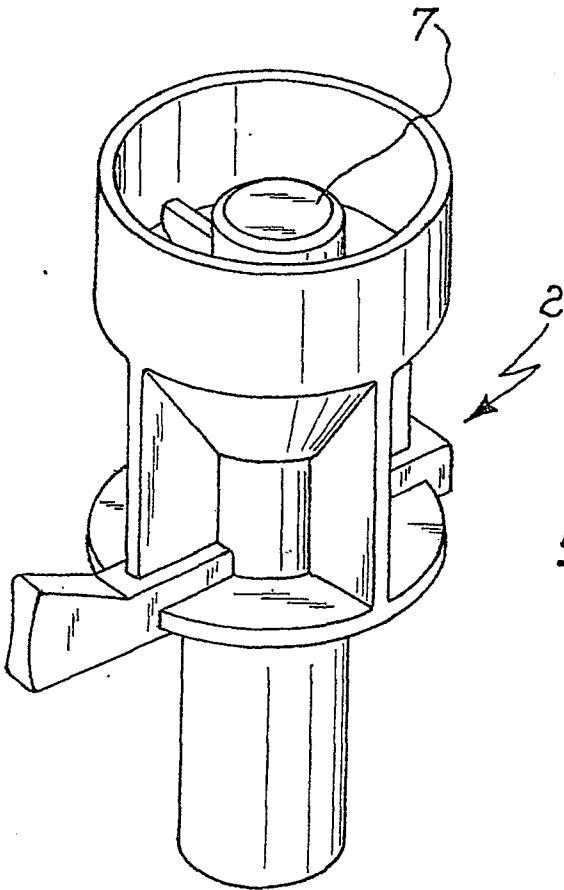
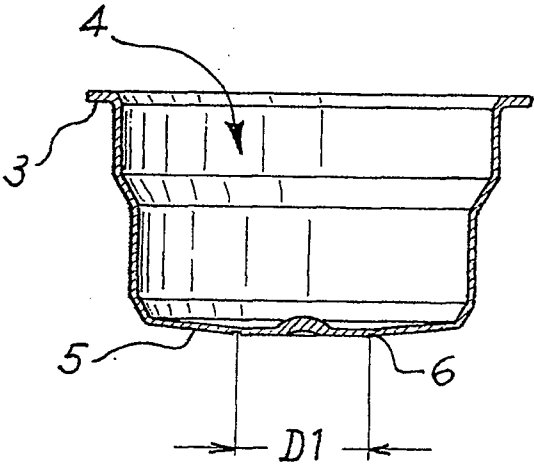


Fig.3

24

Fig. 4

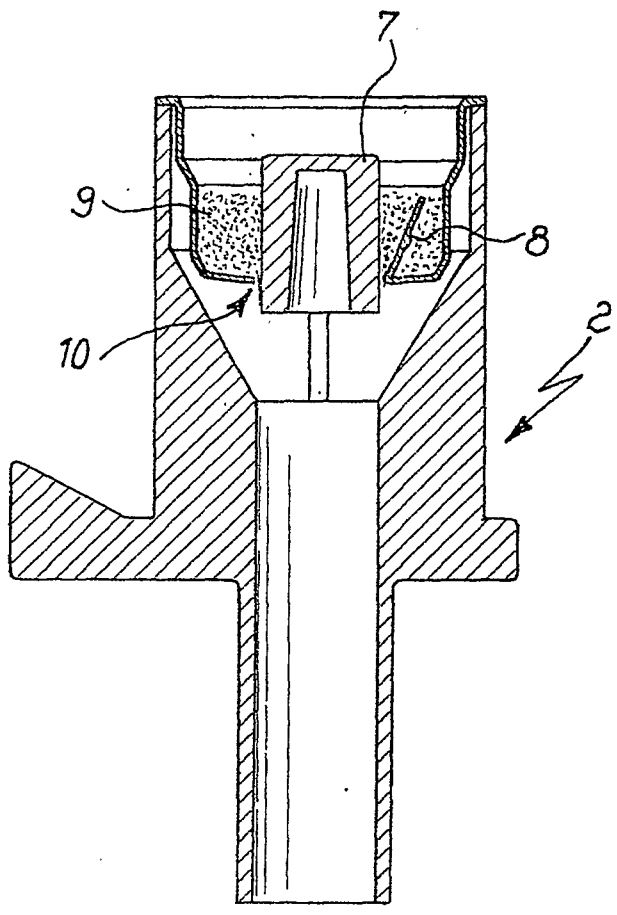


Fig. 5

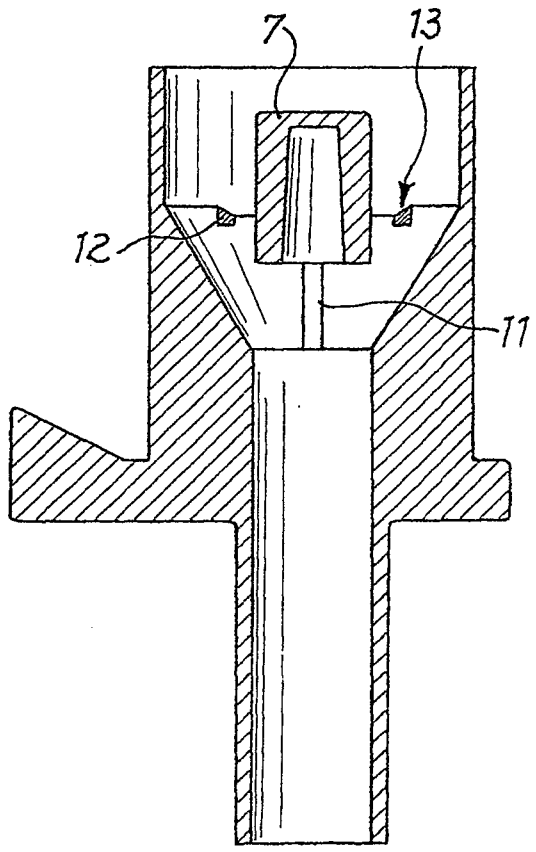


Fig. 6

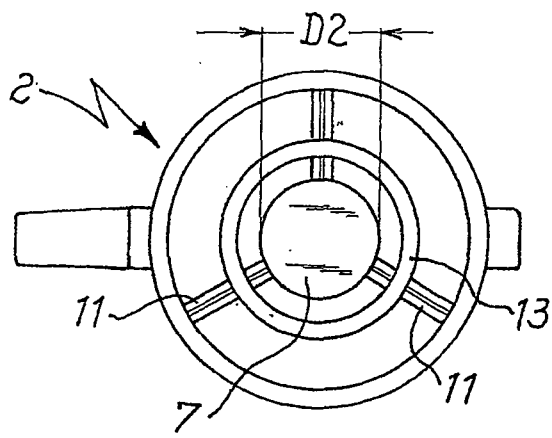


Fig. 7

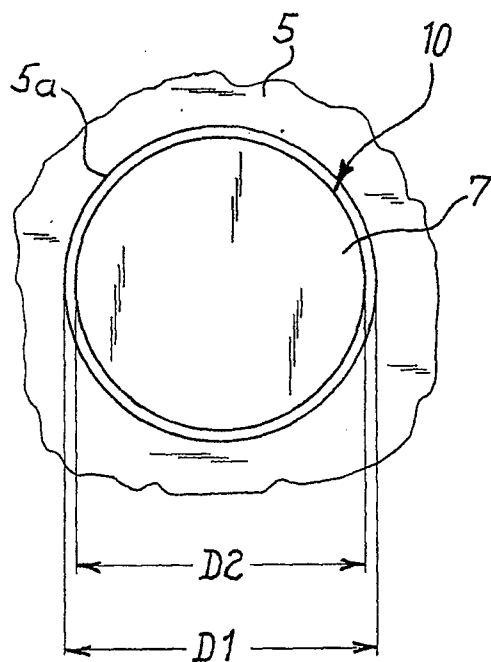


Fig. 8

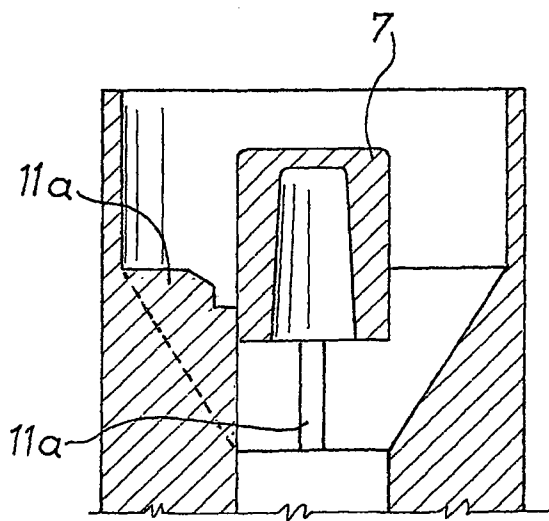
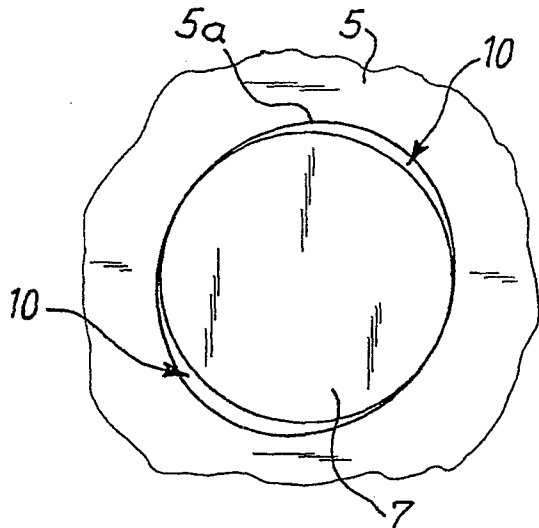


Fig. 9

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL SEARCHING AUTHORITY

To:
MARIETTI, GISLON E TRUPIANO S.R.L.
Attn. Gilson, Gabriele
Via Larga, 16
20122 Milano
ITALY

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing (day/month/year) 30/06/2003	
Applicant's or agent's file reference 02577E50	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/IT 02/ 00630	International filing date (day/month/year) 03/10/2002
Applicant TUTTOESPRESSO S.P.A.	

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Fascimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within **19 months** from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within **20 months** from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Marion Sala}n
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NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 02577E50	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/IT 02/ 00630	International filing date (day/month/year) 03/10/2002	(Earliest) Priority Date (day/month/year)
Applicant TUTTOESPRESSO S.P.A.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 4

- ☒ as suggested by the applicant.
- ☐ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- ☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IT 02/ 00630

30

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

A method and a device are described for the preparation of a beverage from a soluble product contained in a disposable cartridge, based on the regulation of the dispensing of the beverage in such way that the soluble product is delivered in suspension for at least 75% of the total dispensing time. According to one embodiment said device comprises one delivery port between the wall of the piercing member (7) and the edge (5a) of the outlet opening of the cartridge (1).

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 02/00630

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A47J31/40 A47J31/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	WO 02 076270 A (MAJER DOGLIONI LUCA ;TUTTOESPRESSO S P A (IT)) 3 October 2002 (2002-10-03) page 5, line 16 -page 10, line 10; figures 1-3,6-8	1-3,5, 8-11, 16-18, 23-26, 30,31
A	US 5 347 916 A (FOND OLIVIER ET AL) 20 September 1994 (1994-09-20) column 3, line 1-43	1,5,8,9, 16,18, 23,27,31
A	CH 688 686 A (COFFEEA SA) 15 January 1998 (1998-01-15)	
A	US 5 008 013 A (FAVRE ERIC ET AL) 16 April 1991 (1991-04-16)	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

17 June 2003

Date of mailing of the international search report

30/06/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Novelli, B

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 02/00630

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 02076270	A	03-10-2002	WO 02076270 A1	03-10-2002
US 5347916	A	20-09-1994	EP 0471094 A1	19-02-1992
			AT 97789 T	15-12-1993
			AU 648089 B2	14-04-1994
			AU 8033091 A	30-01-1992
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			CA 2046559 A1	28-01-1992
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			JP 2010683 C	02-02-1996
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			JP 7036802 B	26-04-1995
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CH 688686	A	15-01-1998	CH 688686 A5	15-01-1998
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US 5008013	A	16-04-1991	CH 673082 A5	15-02-1990
			AT 83141 T	15-12-1992
			AU 2224488 A	06-04-1989
			BR 8804972 A	02-05-1989
			CA 1300906 A1	19-05-1992
			DE 3876572 D1	21-01-1993
			DE 3876572 T2	03-06-1993
			DK 545988 A	02-04-1989
			EP 0309708 A1	05-04-1989
			ES 2036243 T3	16-05-1993

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IT 02/00630

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5008013	A	FI 884402 A ,B,	02-04-1989
		JP 1115317 A	08-05-1989
		JP 1839225 C	25-04-1994
		JP 5053127 B	09-08-1993
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		NO 884351 A	03-04-1989
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		PT 88620 A	31-07-1989
		ZA 8806799 A	30-05-1989

PATENT COOPERATION TREATY

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

WRITTEN OPINION
(PCT Rule 66)

To:

GILSON, Gabriele
MARIETTI, GISLON E TRUPIANO S.R.L.
Via Larga, 16
20122 Milano
ITALIE

RICEVUTO
21 GIU 2004
MARIETTI, GISLON e TRUPIANO S.r.l.

Date of mailing
(day/month/year) 17.06.2004

Applicant's or agent's file reference
02577E50

REPLY DUE **within 3 month(s)**
from the above date of mailing

International application No.
PCT/IT 02/00630

International filing date (day/month/year)
03.10.2002

Priority date (day/month/year)
03.10.2002

International Patent Classification (IPC) or both national classification and IPC
A47J31/40

Applicant
TUTTOESPRESSO S.P.A. et al.

- This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
- This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
- The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
- The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 03.02.2005

Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Novelli, B
	Formalities officer (incl. extension of time limits) Gamboia Susin, B Telephone No. +49 89 2399-6086



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WRITTEN OPINION

International application No. PCT/IT 02/00630

I. Basis of the opinion

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, Pages

1-10 as originally filed

Claims, Numbers

1-31 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

6. Additional observations, if necessary:

WRITTEN OPINION

International application No. **PCT/IT 02/00630**

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-31; Yes
Inventive step (IS)	Claims	1-31: Yes
Industrial applicability (IA)	Claims	1-31: Yes

2. Citations and explanations

see separate sheet

**WRITTEN OPINION
SEPARATE SHEET**

International application No. PCT/IT02/00630

- 1) Independent Claim 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved. The technical features necessary for achieving this result should be added. Said technical features are indeed disclosed in the appended dependent claims **2-4**.
- 2) Claims 1-15 are directed to a device for the preparation of a beverage, but they contain features relating to the disposable cartridge and to the relationship between the device and the cartridge (cf. in particular the delivery port between the wall of the piercing member and the edge of the cartridge outlet). It results a lack of clarity (Art. 6 PCT).

In order to overcome this objection, it should be made clear that the cartridge is part of the claimed device

- 3) In the case of entry in the regional phase before the EPO, the applicant is informed that the PCT application **WO-A-02/076279** published on 03.10.02 claims the priority date of 23.03.01. It has been supplied to the European Patent Office in one of its official languages and the national fee provided for in Article 22, paragraph 1 or Article 39, paragraph 1 of the Co-operation Treaty has been paid. The requirements of Article 158(2) EPC are thus fulfilled.

Its content as filed is therefore considered as comprised in the state of the art relevant to the question of novelty, pursuant to Article 54(3) and (4) EPC. This earlier application shows (cf. page 5, line 16 - page 10, line 10; figures 1-3, 6-8) a device and a method comprising all features of claims **1-3, 5, 8-11, 16-18, 23-26, 30, 31**.

Thus, it is prejudicial to the novelty of the subject-matter of said claims of the present application insofar as the same Contracting States are designated.

- 4) The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

MARIETTI, GISLON e TRUPIANO

Brevetti, modelli e marchi - European Patent Attorneys - Patent and Trademark Agents



Dr. Ing. Giuseppe Marietti
Dr. Gabriele Gislone
Dr. Federica Trupiano
Dr. Ing. Giuliano Valentini
Dr. Ada Borella
Dr. Ing. Andrea Marietti
Dr. Elena Marietti
Dr. Tiziana Santoro
Dr. Anna Maria Messina
Dr. Ing. Hajnalka Gulyás

Dr. Alberto Negri
Dr. Ing. Matteo Pes
Dr. Carlo Bonucci

Avv. Silvia Giudici (of counsel)
Dr. Ronald W. Andrews (1936-2001)

In partnership with
TORNER, JUNCOSA I ASSOCIATS
c/Bruc, 21 - 08010 Barcellona (Spain)

Dr. Elisabet Torner Lasalle
Dr. Nuria Torner Lasalle
Dr. Jaume Juncosa Miró

20122 Milano - Via Larga, 16
telefono: 02.86464387 (r.a.)
fax: 02.86463303 - 02.72010459
E-mail: info@mgtpatents.com

EUROPEAN PATENT OFFICE
Directorate General 2
D-80298 MUNICHEN

Facsimile + c.c.

Milan, 18.10.2004

CHAPTER II CHAPTER II CHAPTER II

Re: PCT/IT02/00630 - A process and device for preparing beverages from soluble products - Tuttoespresso SpA

With reference to the written opinion dated 17.06.2004, please find enclosed a set of amended claims and the following remarks.

Original claim 1 was amended by adding the features recited in original claim 2 and by clarifying that the cartridge is cooperating with the piercing member of the collecting device.

Amended claim 1 is novel over prior art. None of the cited documents is citing the use of a delivery port between piercing member and cartridge opening that gives the requested length of product delivery. Document WO-A-02/076279 (pertinent under art 54(3) EPC) discloses a dispensing device wherein the piercing device has equal or smaller diameter than the cartridge opening. This is used to have a laminar flow exiting the cartridge. There is no mention in this document of the combination of a throttling arrangement and the claimed dispensing duration of the dispensing of soluble product within the total water dispensing time.

Claim 5 was amended to recite that the supporting element provides a limitation of the deformation angle of the product delivery opening that is within the



range of 0° to 45° degrees. The basis for the amendment can be found at page 9 line 8-9 of published application.

Again, this added feature is not disclosed nor directly and unambiguously derivable from the 54(3) prior art document and amended claim 5 is therefore novel over prior art.

Claim 17 was amended in a way to correspond, *mutatis mutandis*, to amended claim 1.

There is no doubt about the inventive step of the thus amended claims, nor were the original claims objected to this regard, the only objection concerning novelty.

Should the Examiner be of a different opinion or should there be further objections, an informal interview is respectfully requested.

Yours very truly,

Gabriele Gislón
Marietti, Gislón e Trupiano

encl.

CLAIMS

1. A device for the preparation of a beverage from a soluble product, of the type comprising a disposable cartridge (1) containing the soluble product (9), said cartridge comprising at least one outlet for the delivery of a beverage consisting of said soluble product and a fluid, wherein said at least one outlet opening is defined by at least one breaking line (5a) present on one wall (5) of said cartridge, said device further comprising a collecting device (2) having a seat suitable to receive said disposable cartridge and wherein said collecting device comprises one piercing element (7) to pierce said cartridge in correspondence to said breaking line (5a), characterized by comprising means of regulation of the delivery of said beverage comprising at least one delivery port (10) between the wall of said piercing member and the edge of said outlet opening in such a way that said soluble product is delivered for at least 75% of the total dispensing time.

~~2. A device according to Claim 1, wherein said means of regulation comprise at least one delivery port between the wall of said piercing member and the edge of said outlet opening.~~

~~2.8.~~ A device according to Claim 1 ~~or 2~~, wherein said at least one engagement portion of said piercing member is substantially cylindrical in shape with circular section and wherein said outlet opening is substantially circular in shape.

~~3.4.~~ A device according to Claim ~~1~~ or ~~2~~ wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$, preferably $1 < R \leq 1.04$ and more preferably $1 \leq R \leq 1.02$.

~~4.5.~~ ~~Device for the preparation of a beverage from a soluble product, of the type comprising a collecting device having a seat suitable to receive a disposable cartridge containing the soluble product, said cartridge comprising at least one outlet opening for the delivery of a~~

4 ~~8~~. A device for the preparation of a beverage from a soluble product, of the type comprising a collecting device (2) having a seat suitable to receive a disposable cartridge containing the soluble product, said cartridge comprising at least one outlet opening for the delivery of a beverage consisting of said soluble product and a fluid, in which said at least one outlet opening is defined by a breaking line (5a) provided on a wall (5) of said cartridge and wherein said collecting device (2) comprises at least one piercing member (7) to pierce said cartridge (1) in correspondence to said breaking line (5a) in order to form at least one delivery port of the beverage, characterized by comprising means of controlling the deformation of the cartridge base wall (5) during the dispensing step of said beverage, said means of controlling comprising a supporting element (11, 11a, 13) that provides a limitation of the deformation angle of the product delivery opening edge (5a) that is within the range of 0° to 45° degrees.

5 ~~8~~. A device according to Claim ~~8~~⁴, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$, preferably $1 < R \leq 1.04$ and more preferably $1 \leq R \leq 1.02$.

6 ~~7~~. A device according to Claim ~~7~~¹ or ~~8~~⁵, wherein the section of said delivery port is substantially circular crown-shaped, and wherein ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member and is $1 < R \leq 1.014$.

7 ~~8~~. A device according to Claim 1 or ~~8~~⁴, wherein said means of regulation comprise one or more stop elements for limiting the deformation of a portion of the wall of said cartridge in proximity of said outlet opening.

8 ~~7~~. A device according to Claim 1 or ~~8~~⁴, wherein said means comprise at least one portion of the base wall of said cartridge being made of plastic material with visco-elastic behaviour.

9 ~~10~~. A device according to Claim ~~7~~, wherein said one or more stop elements comprise one or more fins which support said piercing member.

10 ~~11~~. A device according to Claim ~~8~~⁷ or ~~10~~⁹, wherein said one or more stop elements comprise at least one annular member having diameter

greater than said outlet opening.

11 ~~12~~. A device according to Claim ~~11~~¹⁰, wherein said annular member presents a surface portion tilted towards the base wall of said cartridge.

12 ~~13~~. A device according to Claim ~~12~~¹¹, wherein said tilted surface portion
5 has an inclination between 0° and 45° with respect to a horizontal plane supported on said annular member.

13 ~~14~~. A device according to Claim ~~13~~¹¹, wherein said tilted surface portion has an inclination between 15° and 35° with respect to a horizontal plane supported on said annular member.

10/14 ~~15~~. A device according to Claim ~~14~~¹¹, wherein said tilted surface portion has an inclination of 30° with respect to a horizontal plane supported on said annular member.

16. A method for the preparation of a beverage from a soluble product (9) contained in a disposable cartridge (1), wherein said cartridge is housed in the seat of a collecting device (2) having at least one piercing member (7) in order to open an outlet opening from said cartridge, said opening being defined by at least one breaking line (5a) present on a wall (5) of said cartridge and wherein entry of a fluid into said cartridge is provided for through an entry port of the same in order to obtain the dispensing of a beverage consisting of said soluble product and said fluid, characterized by providing regulation of the dispensing of the said beverage by means of at least one delivery port (10) between the wall (5) of said piercing member and the edge (5a) of said outlet opening in such a way that said soluble product is delivered for at least 75% of the total dispensing time.

16 ~~17~~. A method according to Claim ~~16~~¹⁵, wherein the regulation of the dispensing is carried out by means of at least one delivery port between
25 the wall of said piercing member and the edge of said outlet opening.

17 ~~18~~. A method according to Claim ~~17~~¹⁵ or ~~18~~¹⁶, wherein said at least one engagement portion of said piercing member is substantially cylindrical in shape with circular section and wherein said outlet opening is substantially circular in shape.

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19. A method according to Claim ¹⁶17 or ¹⁷18, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$.
- 5 19 20. A method according to Claim ¹⁶17 or ¹⁷18, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.04$.
- 20 21. A method according to Claim ¹⁶17 or ¹⁷18, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.02$.
- 10 21 22. A method according to Claim ¹⁶17 or ¹⁷18, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.014$.
- 15 22 23. A method according to Claim ¹⁵16, wherein regulation of dispensing is carried out by means of one or more stop elements in order to limit the deformation of a portion of wall of said cartridge in proximity of said outlet opening.
- 20 23 24. A method according to Claim ¹⁵16, wherein said outlet opening is cut into the base wall of said cartridge.
- 24 25. A method according to Claim ²²23 or ²³24, wherein said one or more stop elements comprise one or more fins supporting said piercing member.
- 25 25 26. A method according to Claim ²²23 or ²³24, wherein said one or more stop elements comprise one or more annular members having diameter greater than said outlet opening.
- 26 27. A method according to Claim ²⁵26, wherein said annular member

has a surface portion tilted towards the base wall of said cartridge.

~~27~~²⁶ 28. A method according to Claim ~~27~~²⁶, wherein said tilted surface portion has an inclination between 0° and 45° with respect to a horizontal plane supported on said annular member.

5 ~~28~~²⁶ 29. A method according to Claim ~~27~~²⁶, wherein said tilted surface portion has an inclination between 15° and 35° and preferably 30° with respect to a horizontal plane supported on said annular member.

~~29~~¹⁵ 30. A method according to Claim ~~16~~¹⁵, characterised by controlling said deformation by means of the use of plastic material with visco-elastic
10 behaviour for the production of said cartridge.

~~30~~¹⁴ 31. Disposable cartridge for the preparation of a beverage from a soluble product in a device for beverage preparation according to any of Claims 1 to ~~13~~¹⁴ or by the performing a method according to any of Claims ~~15~~¹⁵ to ~~30~~²⁹.

PATENT COOPERATION TREATY



From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

GILSON, Gabriele
MARIETTI, GISLON E TRUPIANO S.R.L.
Via Larga, 16
20122 Milano
ITALIE

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

13.12.2004

Applicant's or agent's file reference
02577E50

IMPORTANT NOTIFICATION

International application No.
PCT/IT 02/00630

International filing date (day/month/year)
03.10.2002

Priority date (day/month/year)
03.10.2002

Applicant
TUTTOESPRESSO S.P.A. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Thumser, A

Tel. +49 89 2399-7991



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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

Applicant's or agent's file reference 02577E50	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IT 02/00630	International filing date (day/month/year) 03.10.2002	Priority date (day/month/year) 03.10.2002
International Patent Classification (IPC) or both national classification and IPC A47J31/40		
Applicant TUTTOESPRESSO S.P.A. et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 5 sheets.

- This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☒ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 21.04.2004	Date of completion of this report 13.12.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Novelli, B Telephone No. +49 89 2399-2864 

INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

International application No. PCT/IT 02/00630

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-10 as originally filed

Claims, Numbers

1-30 received on 18.10.2004 with letter of 18.10.2004

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

International application No. PCT/IT 02/00630

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).
- (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*
6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
 - ☒ not complied with for the following reasons:
- see separate sheet**
4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:
- ☒ all parts.
 - ☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-30
	No: Claims	
Inventive step (IS)	Yes: Claims	1-30
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-30
	No: Claims	

2. Citations and explanations

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/IT 02/00630

see separate sheet

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IT 02/00630

- 1) This Authority considers that there are 2 inventions covered by the claims indicated as follows:

- | | | |
|-----|-----------------------------------|--|
| I: | Independent Claims 1, 16 : | device and method wherein at least one delivery port is provided between the wall of the piercing member and the edge of the outlet opening. |
| II: | Independent Claim 4 : | device comprising means of controlling the deformation of the cartridge base wall. |

Said inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT. •

- 2.1) In the case of entry in the regional phase before the EPO, the applicant is informed that the PCT application **WO-A-02/076279** published on 03.10.02 claims the priority date of 23.03.01. It has been supplied to the European Patent Office in one of its official languages and the national fee provided for in Article 22, paragraph 1 or Article 39, paragraph 1 of the Co-operation Treaty has been paid. The requirements of Article 158(2) EPC are thus fulfilled.

Its content as filed is therefore considered as comprised in the state of the art relevant to the question of novelty, pursuant to Article 54(3) and (4) EPC.

- 2.2) This earlier application shows (cf. page 5, line 16 - page 7, line 20; figures 1-2) a device and a method comprising all features of independent claims **1** and **16**.

Furthermore this earlier application shows (cf. page 7, line 21 - page 9, line 26; figs 3-8) a device comprising all independent claim **4** features.

The additional features of dependent claims **2, 7-10, 15-17, 22-25, 29, 30** are also disclosed in said earlier application.

Thus, said earlier application is prejudicial to the novelty of the subject-matter of claims **1, 2, 4, 7-10, 15-17, 22-25, 29, 30** of the present application insofar as the same Contracting States are designated.

CLAIMS

1. A device for the preparation of a beverage from a soluble product, of the type comprising a disposable cartridge (1) containing the soluble product (9), said cartridge comprising at least one outlet for the delivery of a beverage consisting of said soluble product and a fluid, wherein said at least one outlet opening is defined by at least one breaking line (5a) present on one wall (5) of said cartridge, said device further comprising a collecting device (2) having a seat suitable to receive said disposable cartridge and wherein said collecting device comprises one piercing element (7) to pierce said cartridge in correspondence to said breaking line (5a), characterized by comprising means of regulation of the delivery of said beverage comprising at least one delivery port (10) between the wall of said piercing member and the edge of said outlet opening in such a way that said soluble product is delivered for at least 75% of the total dispensing time.

~~2. A device according to Claim 1, wherein said means of regulation comprise at least one delivery port between the wall of said piercing member and the edge of said outlet opening.~~

2. A device according to Claim 1 or 2, wherein said at least one engagement portion of said piercing member is substantially cylindrical in shape with circular section and wherein said outlet opening is substantially circular in shape.

3. A device according to Claim 1 or 2, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$, preferably $1 < R \leq 1.04$ and more preferably $1 \leq R \leq 1.02$.

~~4. Device for the preparation of a beverage from a soluble product, of the type comprising a collecting device having a seat suitable to receive a disposable cartridge containing the soluble product, said cartridge comprising at least one outlet opening for the delivery of a~~

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4 ~~5~~. A device for the preparation of a beverage from a soluble product, of the type comprising a collecting device (2) having a seat suitable to receive a disposable cartridge containing the soluble product, said cartridge comprising at least one outlet opening for the delivery of a beverage consisting of said soluble product and a fluid, in which said at least one outlet opening is defined by a breaking line (5a) provided on a wall (5) of said cartridge and wherein said collecting device (2) comprises at least one piercing member (7) to pierce said cartridge (1) in correspondence to said breaking line (5a) in order to form at least one delivery port of the beverage, characterized by comprising means of controlling the deformation of the cartridge base wall (5) during the dispensing step of said beverage, said means of controlling comprising a supporting element (11, 11a, 13) that provides a limitation of the deformation angle of the product delivery opening edge (5a) that is within the range of 0° to 45° degrees.

5 ~~6~~. A device according to Claim ~~5~~⁴, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$, preferably $1 < R \leq 1.04$ and more preferably $1 \leq R \leq 1.02$.

6 ~~7~~. A device according to Claim ~~4~~¹ or ~~5~~⁵, wherein the section of said delivery port is substantially circular crown-shaped, and wherein ratio R between the diameter of the said outlet opening and the diameter of the engagement portion of said piercing member and is $1 < R \leq 1.014$.

7 ~~8~~. A device according to Claim 1 or ~~5~~⁴, wherein said means of regulation comprise one or more stop elements for limiting the deformation of a portion of the wall of said cartridge in proximity of said outlet opening.

8 ~~9~~. A device according to Claim 1 or ~~5~~⁴, wherein said means comprise at least one portion of the base wall of said cartridge being made of plastic material with visco-elastic behaviour.

9 ~~10~~. A device according to Claim 7, wherein said one or more stop elements comprise one or more fins which support said piercing member.

10 ~~11~~. A device according to Claim ~~8~~⁷ or ~~10~~⁹, wherein said one or more stop elements comprise at least one annular member having diameter

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greater than said outlet opening.

- 11 ~~12~~. A device according to Claim ~~12~~¹⁰, wherein said annular member presents a surface portion tilted towards the base wall of said cartridge.
- 12 ~~13~~. A device according to Claim ~~12~~¹¹, wherein said tilted surface portion has an inclination between 0° and 45° with respect to a horizontal plane supported on said annular member.
- 13 ~~14~~. A device according to Claim ~~12~~¹¹, wherein said tilted surface portion has an inclination between 15° and 35° with respect to a horizontal plane supported on said annular member.
- 10/14 ~~15~~. A device according to Claim ~~12~~¹¹, wherein said tilted surface portion has an inclination of 30° with respect to a horizontal plane supported on said annular member.

16. A method for the preparation of a beverage from a soluble product (9) contained in a disposable cartridge (1), wherein said cartridge is housed in the seat of a collecting device (2) having at least one piercing member (7) in order to open an outlet opening from said cartridge, said opening being defined by at least one breaking line (5a) present on a wall (5) of said cartridge and wherein entry of a fluid into said cartridge is provided for through an entry port of the same in order to obtain the dispensing of a beverage consisting of said soluble product and said fluid, characterized by providing regulation of the dispensing of the said beverage by means of at least one delivery port (10) between the wall (5) of said piercing member and the edge (5a) of said outlet opening in such a way that said soluble product is delivered for at least 75% of the total dispensing time.

- 16 ~~17~~. A method according to Claim ~~15~~¹⁵ wherein the regulation of the dispensing is carried out by means of at least one delivery port between the wall of said piercing member and the edge of said outlet opening.
- 17 ~~18~~. A method according to Claim ~~18~~¹⁵ or ~~17~~¹⁶, wherein said at least one engagement portion of said piercing member is substantially cylindrical in shape with circular section and wherein said outlet opening is substantially circular in shape.

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18. A method according to Claim ~~17~~¹⁶ or ~~18~~¹⁷, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.067$.
- 5 19~~20~~. A method according to Claim ~~17~~¹⁶ or ~~18~~¹⁷, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.04$.
- 20 20~~21~~. A method according to Claim ~~17~~¹⁶ or ~~18~~¹⁷, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.02$.
- 21 21~~22~~. A method according to Claim ~~17~~¹⁶ or ~~18~~¹⁷, wherein the section of said delivery port is substantially circular crown-shaped, and wherein the ratio R between the diameter of said outlet opening and the diameter of the engagement portion of said piercing member is $1 < R \leq 1.014$.
- 15 22~~23~~. A method according to Claim ~~16~~¹⁵, wherein regulation of dispensing is carried out by means of one or more stop elements in order to limit the deformation of a portion of wall of said cartridge in proximity of said outlet opening.
- 20 23~~24~~. A method according to Claim ~~16~~¹⁵, wherein said outlet opening is cut into the base wall of said cartridge.
- 24~~25~~. A method according to Claim ~~23~~²² or ~~24~~²³, wherein said one or more stop elements comprise one or more fins supporting said piercing member.
- 25 25~~26~~. A method according to Claim ~~23~~²² or ~~24~~²³, wherein said one or more stop elements comprise one or more annular members having diameter greater than said outlet opening.
- 26~~27~~. A method according to Claim ~~26~~²⁵, wherein said annular member

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has a surface portion tilted towards the base wall of said cartridge.

27 ~~28~~. A method according to Claim ~~27~~²⁶, wherein said tilted surface portion has an inclination between 0° and 45° with respect to a horizontal plane supported on said annular member.

5 ~~28~~²⁹. A method according to Claim ~~27~~²⁶, wherein said tilted surface portion has an inclination between 15° and 35° and preferably 30° with respect to a horizontal plane supported on said annular member.

29 ~~30~~. A method according to Claim ~~26~~¹⁵, characterised by controlling said deformation by means of the use of plastic material with visco-elastic
10 behaviour for the production of said cartridge.

30 ~~31~~. Disposable cartridge for the preparation of a beverage from a soluble product in a device for beverage preparation according to any of Claims 1 to ~~15~~¹⁴ or by the performing a method according to any of Claims ~~15~~¹⁵ to ~~30~~²⁹.

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The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ EP

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only	
Identification of IPEA	Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION	
Applicant's or agent's file reference 02577E50	
International application No. PCT/IT02/00630	International filing date (day/month/year) 03 October 2002 (03.10.02)
(Earliest) Priority date (day/month/year)	
Title of invention "A process and a device for preparing beverages from soluble products"	
Box No. II APPLICANT(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) TUTTOESPRESSO S.p.A. Via Trieste, 49 I-21042 CARONNO PERTUSELLA (VA) Italy	
Telephone No. +39-02-96730600	
Facsimile No. +39-02-96731856	
Teleprinter No.	
Applicant's registration No. with the Office	
State (that is, country) of nationality: Italian	State (that is, country) of residence: Italy
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) MAJER DOGLIONI, Luca Via Dei Cristoforis, 14 I-22010 Carate Uriò (COMO) Italy	
State (that is, country) of nationality: Italian	State (that is, country) of residence: Italy
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
State (that is, country) of nationality:	
State (that is, country) of residence:	
☐ Further applicants are indicated on a continuation sheet.	

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: (Family name followed by given name; for a legal entity, full official designation.
The address must include postal code and name of country.)GISLON, Gabriele
MARIETTI, GISLON e TRUPIANO S.r.l.
Via Larga, 16
I-20122 Milan
Italy

Telephone No.

+39-02-86464387

Facsimile No.

+39-02-86463303

Teleprinter No.

Agent's registration No. with the Office

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION

Statement concerning amendments:*

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filedthe description ☒ as originally filed☐ as amended under Article 34the claims ☒ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34the drawings ☒ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). (This check-box may be marked only where the time limit under Article 19 has not yet expired.)

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English

☐ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☒ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Box No. V ELECTION OF STATES

The applicant hereby elects all eligible States (that is, all States which have been designated and which are bound by Chapter II of the PCT)

excluding the following States which the applicant wishes not to elect:

Sheet No. 3.

International application No.
PCT/IT02/00630

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (specify) | : | sheets |

For International Preliminary Examining Authority use only

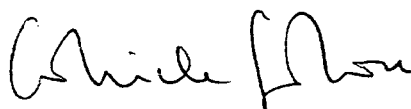
received	not received
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

The demand is also accompanied by the item(s) marked below:

- | | |
|--|---|
| 1. ☒ fee calculation sheet | 5. ☐ statement explaining lack of signature |
| 2. ☐ original separate power of attorney | 6. ☐ sequence listings in computer readable form |
| 3. ☐ original general power of attorney | 7. ☐ tables in computer readable form related to sequence listings |
| 4. ☐ copy of general power of attorney; reference number, if any: | 8. ☐ other (specify): |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



GISLON, Gabriele
(Agent)

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

PATENT COOPERATION TREATY

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RICEVUTO

19 MAG 2004

PCT MARIETTI, GISLON e TRUPIANO S.r.l.

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

GILSON, Gabriele
MARIETTI, GISLON E TRUPIANO S.R.L.
Via Larga, 16
20122 Milano
ITALIE

NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rules 59.3(e) and 61.1(b), first sentence
and Administrative Instructions, Section 601(a))

Date of mailing
(day/month/year)

17-05-2004

Applicant's or agent's file reference
02577E50

IMPORTANT NOTIFICATION

International application No.

PCT/IT02/00630

International filing date (day/month/year)

03/10/2002

Priority date (day/month/year)

03/10/2002

Applicant

TUTTOESPRESSO S.P.A. et al.

1. The applicant is hereby **notified** that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

21/04/2004

2. This date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPEA/404), received the required corrections.

3. ☐ **ATTENTION:** That date of receipt is **after** the expiration of 19 months from the priority date. Consequently, in respect of some Offices, the demand does not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)) and the acts for entry into the national phase must therefore be performed within 20 months from the priority date (or later in some Offices). **However**, in respect of some other Offices, the time limit of 30 months (or later) may nevertheless apply. See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/

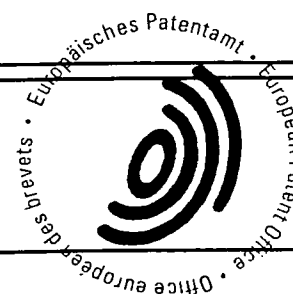


European Patent Office
D-80298 Munich
Tel. (+49-89) 2399-0, Tx: 523656 epmu d
Fax: (+49-89) 2399-4465

Authorized officer

FERRO VASCONCELOS M

Tel. (+49-89) 2399-7905



PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference (if desired) (12 characters maximum) 02577E50

Box No. I TITLE OF INVENTION

"A process and a device for preparing beverages from soluble products"

Box No. II APPLICANT

☐ This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

TUTTOESPRESSO S.p.A.
Via Trieste, 49
I-21042 CARONNO PETRUSSELLA (VA)
Italy

Telephone No.
+39-02-96730600

Facsimile No.
+39-02-96731856

Teleprinter No.

Applicant's registration No. with the Office

State (that is, country) of nationality:

IT

State (that is, country) of residence:

IT

This person is applicant for the purposes of:

☐ all designated States

☒ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

MAJER DOGLIONI, Luca
Via Dei Cristoforis, 14
I-22010 Carate Urlo (COMO)
Italy

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

IT

State (that is, country) of residence:

IT

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☒ the United States of America only

☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

GISLON, Gabriele
MARIETTI, GISLON e TRUPIANO S.r.l.
Via Larga, 16
I-20122 MILAN
Italy

Telephone No.
+39-02-86464387

Facsimile No.
+39-02-86463303

Teleprinter No.

Agent's registration No. with the Office

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. V DESIGNATION OF STATES

Mark the applicable check-boxes below: at least one must be marked.

The following designations are hereby made under Rule 4.9(a):

Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZM Zambia, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT (if other kind of protection or treatment desired, specify on dotted line)
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, BG Bulgaria, CH & LI Switzerland and Liechtenstein, CY Cyprus, CZ Czech Republic, DE Germany, DK Denmark, EE Estonia, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, SK Slovakia, TR Turkey, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GQ Equatorial Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | | |
|---|--|--|
| ☒ AE United Arab Emirates | ☒ GM Gambia | ☒ NZ New Zealand |
| ☒ AG Antigua and Barbuda | ☒ HR Croatia | ☒ OM Oman |
| ☒ AL Albania | ☒ HU Hungary | ☒ PH Philippines |
| ☒ AM Armenia | ☒ ID Indonesia | ☒ PL Poland |
| ☒ AT Austria | ☒ IL Israel | ☒ PT Portugal |
| ☒ AU Australia | ☒ IN India | ☒ RO Romania |
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| ☒ BB Barbados | ☒ KE Kenya | ☒ SD Sudan |
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| ☒ BR Brazil | ☒ KP Democratic People's Republic of Korea | ☒ SG Singapore |
| ☒ BY Belarus | ☒ KR Republic of Korea | ☒ SI Slovenia |
| ☒ BZ Belize | ☒ KZ Kazakhstan | ☒ SK Slovakia |
| ☒ CA Canada | ☒ LC Saint Lucia | ☒ SL Sierra Leone |
| ☒ CH & LI Switzerland and Liechtenstein | ☒ LK Sri Lanka | ☒ TJ Tajikistan |
| ☒ CN China | ☒ LR Liberia | ☒ TM Turkmenistan |
| ☒ CO Colombia | ☒ LS Lesotho | ☒ TN Tunisia |
| ☒ CR Costa Rica | ☒ LT Lithuania | ☒ TR Turkey |
| ☒ CU Cuba | ☒ LU Luxembourg | ☒ TT Trinidad and Tobago |
| ☒ CZ Czech Republic | ☒ LV Latvia | |
| ☒ DE Germany | ☒ MA Morocco | ☒ TZ United Republic of Tanzania |
| ☒ DK Denmark | ☒ MD Republic of Moldova | ☒ UA Ukraine |
| ☒ DM Dominica | | ☒ UG Uganda |
| ☒ DZ Algeria | ☒ MG Madagascar | ☒ US United States of America |
| ☒ EC Ecuador | ☒ MK The former Yugoslav Republic of Macedonia | |
| ☒ EE Estonia | ☒ MN Mongolia | ☒ UZ Uzbekistan |
| ☒ ES Spain | ☒ MW Malawi | ☒ VN Viet Nam |
| ☒ FI Finland | ☒ MX Mexico | ☒ YU Yugoslavia |
| ☒ GB United Kingdom | ☒ MZ Mozambique | ☒ ZA South Africa |
| ☒ GD Grenada | ☒ NO Norway | ☒ ZM Zambia |
| ☒ GE Georgia | | ☒ ZW Zimbabwe |
| ☒ GH Ghana | | |

Check-boxes below reserved for designating States which have become party to the PCT after issuance of this sheet:

☐	☐	☐
☐	☐	☐

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application:* regional Office	international application: receiving Office
item (1)				
item (2)				
item (3)				
item (4)				
item (5)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

☐ all items ☐ item (1) ☐ item (2) ☐ item (3) ☐ item (4) ☐ item (5) ☐ other, see Supplemental Box

* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA /

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year) Number Country (or regional Office)

Box No. VIII DECLARATIONS

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

Number of
declarations

- | | | |
|---|--|---|
| ☐ Box No. VIII (i) | Declaration as to the identity of the inventor | : |
| ☐ Box No. VIII (ii) | Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent | : |
| ☐ Box No. VIII (iii) | Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application | : |
| ☐ Box No. VIII (iv) | Declaration of inventorship (only for the purposes of the designation of the United States of America) | : |
| ☐ Box No. VIII (v) | Declaration as to non-prejudicial disclosures or exceptions to lack of novelty | : |

Box No. IX CHECK LIST: LANGUAGE OF FILING

This international application contains:	This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):	Number of items
(a) the following number of sheets in paper form:	1. ☒ fee calculation sheet	1
request (including declaration sheets) : 4	2. ☐ original separate power of attorney WILL FOLLOW	:
description (excluding sequence listing part) : 10	3. ☐ original general power of attorney	:
claims : 5	4. ☐ copy of general power of attorney; reference number, if any:	:
abstract : 1	5. ☐ statement explaining lack of signature	:
drawings : 3	6. ☐ priority document(s) identified in Box No. VI as item(s):	:
Sub-total number of sheets : 23	7. ☐ translation of international application into WILL FOLLOW (language): ENGLISH	:
sequence listing part of description (actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (b) below) :	8. ☐ separate indications concerning deposited microorganism or other biological material	:
Total number of sheets : 23	9. ☐ sequence listing in computer readable form (indicate also type and number of carriers (diskette, CD-ROM, CD-R or other))	:
(b) sequence listing part of description filed in computer readable form	(i) ☐ copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application)	:
(i) ☐ only (under Section 801(a)(i))	(ii) ☐ (only where check-box (b)(i) or (b)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter	:
(ii) ☐ in addition to being filed in paper form (under Section 801(a)(ii))	(iii) ☐ together with relevant statement as to the identity of the copy or copies with the sequence listing part mentioned in left column	:
Type and number of carriers (diskette, CD-ROM, CD-R or other) on which the sequence listing part is contained (additional copies to be indicated under item 9(ii), in right column):	10. ☐ other (specify):	:

Figure of the drawings which should accompany the abstract: 4	Language of filing of the international application: Italian
---	--

Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).



GISLON, Gabriele

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings: ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority (if two or more are competent): ISA /	6. ☐ Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

PATENT COOPERATION TREATY

From the RECEIVING OFFICE

To:

GISLON, Gabriele
MARIETTI, GISLON e TRUPIANO S.r.l.
Via Larga, 16
I-20122 MILAN
Italy

PCT

NOTIFICATION OF RECEIPT OF PAPERS
PURPORTING TO BE AN INTERNATIONAL
APPLICATION

(PCT Administrative Instructions, Section 301)

Date of mailing
(day/month/year)

09 OTT. 2002

Applicant's or agent's file reference

02577E50

IMPORTANT NOTIFICATION

International application No.

PCT/IT 02 / 00630

Date of receipt (day/month/year)

03 OCT 2002

Applicant

TUTTOESPRESSO S.p.A. et al.

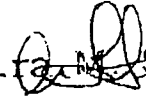
Title of the invention

"A process and a device for preparing beverages from soluble products"

1. The applicant is hereby notified that this receiving Office has received papers purporting to be an international application on the date of receipt indicated above.
2. The applicant's attention is drawn to the fact that these papers have not yet been checked by this receiving Office in respect of their compliance with the requirements of Article 11(1), that is, whether these papers meet the requirements necessary for the according of an international filing date.
3. As soon as this receiving Office has checked these papers, it will inform the applicant accordingly.
4. These papers have provisionally been given the international application number indicated above. The applicant is hereby requested to make reference to that number in all correspondence with this receiving Office.

Name and mailing address of the receiving Office
MINISTERO DELL'ATTIVITA' PRODUTTIVA
Direzione Generale per lo sviluppo produttivo e la competitività
Facsimile No.

Authorized officer

Sig.  SANTINI

Telephone No.

PATENT COOPERATION TREATY

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PCT

NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

GISLON, Gabriele
Marietti, Gislone & Trupiano S.r.l.
Via Larga, 16
I-20122 Milan
Italy

Date of mailing (day/month/year) 20 January 2003 (20.01.03)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 02577E50	International application No. PCT/IT02/00630

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

TUTTOESPRESSO S.P.A. (for all designated States except US)
MAJER DOGLIONI, Luca (for US)

International filing date : 03 October 2002 (03.10.02)
Priority date(s) claimed :
Date of receipt of the record copy
by the International Bureau : 26 November 2002 (26.11.02)
List of designated Offices :

AP : GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW
EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
EP : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR
OA : BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG
National : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ,
EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- ☒ time limits for entry into the national phase - see updated important information (as of April 2002)
☒ confirmation of precautionary designations (if applicable)
☐ requirements regarding priority documents (if applicable)

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer: SUAREZ Javier
Facsimile No. (41-22) 338-9999	Telephone No. (41-22) 338 9999



RICEVUTO

PATENT COOPERATION TREATY

22 APR 2004

From the INTERNATIONAL BUREAU

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MARIETTI, GISLON e TRUPIANO S.r.l.

PCT

NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

GISLON, Gabriele
Marietti, Gislone & Trupiano S.r.l.
Via Larga, 16
I-20122 Milan
ITALIE

Date of mailing (day/month/year)
15 April 2004 (15.04.2004)

Applicant's or agent's file reference
02577E50

IMPORTANT NOTICE

International application No.
PCT/IT2002/000630

International filing date (day/month/year)
03 October 2002 (03.10.2002)

Priority date (day/month/year)

Applicant

TUTTOESPRESSO S.P.A. et al

1. Notice is hereby given that the International Bureau has **communicated**, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this notice:

AU, AZ, BY, CH, CN, CO, DZ, EP, HU, JP, KG, KP, KR, MD, MK, MZ, RU, TM, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AG, AL, AM, AP, AT, BA, BB, BG, BR, BZ, CA, CR, CU, CZ, DE, DK, DM, EA, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, ID, IL, IN, IS, KE, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MG, MN, MW, MX, NO, NZ, OA, OM, PH, PL, PT, RO, SD, SE, SG, SI, SK, SL, TJ, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this notice is a copy of the international application as published by the International Bureau on 15 April 2004 (15.04.2004) under No. WO 2004/030499

4. **TIME LIMITS for filing a demand for international preliminary examination and for entry into the national phase**

The applicable time limit for entering the national phase will, **subject to what is said in the following paragraph**, be **30 MONTHS** from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of **19 months** from the priority date, but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see *PCT Gazette* No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the *PCT Newsletter*, October and November 2001 and February 2002 issues.

In practice, **time limits other than the 30-month time limit** will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For **regular updates on the applicable time limits** (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

For filing a **demand for international preliminary examination**, see the *PCT Applicant's Guide*, Volume I/A, Chapter IX. Only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

It is the applicant's **sole responsibility** to monitor all these time limits.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Gijsbertus Beijer - Carlos Roy

Facsimile No.(41-22) 740.14.35

Telephone No.(41-22) 338.91.11

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TRATADO DE COOPERACIÓN DE PATENTES
PCT
INFORME DE EXAMEN PRELIMINAR INTERNACIONAL
(Artículo 36 y Regla 70 del PCT)

Referencia del expediente del agente o solicitante 02577E50	PARA ACTUACIONES ADICIONALES	Ver notificación de Transmisión del Reporte de Examen Preliminar (Formato PCT/IPEA416)
Solicitud internacional No. PCT/IT02/00630	Fecha de presentación internacional (día/mes/año) 03/10/2002	Fecha de prioridad (día/mes/año) 03/10/2002
Clasificación Internacional de Patentes (IPC) o clasificación nacional e IPC A47J 31/40		
Solicitante TUTTOESPRESSO S.P.A. et al.		

1. Este informe de examen preliminar internacional ha sido preparado por esta Administración encargada del Examen Preliminar Internacional y se envía al solicitante en concordancia con el artículo 36.

2. Este **INFORME** consta de una total de 5 hojas, incluyendo la portada

☒ Este informe también se acompaña de **ANEXOS**, esto es documentos de la descripción, reivindicaciones y/o dibujos que han sido corregidos y que son la base de este informe y/o documentos que contienen rectificaciones realizadas ante esta Administración (Ver Regla 70.16 y Sección 607 de las Instrucciones Administrativas según el PCT)

Estos anexos constan de un total de 5 hojas.

3. Este informe contiene indicaciones relativas a los siguientes aspectos:

I☒ Fundamentos del Informe

II☐ Prioridad

III☐ No se establece concepto relativo a la novedad, nivel inventivo y aplicación industrial

IV☒ Carencia de unidad de la invención

V☒ Declaración razonada según el artículo 35(2), en relación con la novedad, nivel inventivo o aplicación industrial; citaciones y explicaciones que soportan dicha declaración

VI☐ Ciertos documentos citados

VII☐ Ciertos defectos de la solicitud internacional

VIII☐ Ciertas observaciones respecto a la solicitud internacional

Fecha de presentación de la demanda 21/04/2004	Fecha de terminación de este reporte 13/12/2004
Nombre y dirección de correo de la autoridad encargada del examen preliminar Oficina de Patentes Europea D- 80298 Munich Tel. +49 89 2399 – 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Funcionario Autorizado Novelli, B Teléfono No. +49 89 2399 - 2864

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I. Base del informe

1. Respecto a los **elementos** de la solicitud internacional (*Las hojas de reemplazo que han sido entregadas a la Oficina receptora en respuesta a la invitación bajo el Artículo 14 se refieren en este informe como "originalmente presentadas" y no se anexan a este informe ya que ellas no contienen modificaciones (Regla 70.16 y 70.17):*

- ☒ La descripción, páginas:
páginas 1 – 10, como se presentaron originalmente
- ☒ Las reivindicaciones, números:
páginas 1 – 30, recibidas el 18/10/2004 junto con la carta de 18/10/2004
- ☒ Los dibujos, hojas:
páginas 1/3 - 3/3, como se presentaron originalmente

2. Respecto al **lenguaje**, todos los elementos marcados anteriormente estuvieron disponibles o fueron enviados a la Administración en el lenguaje en que se presentó la solicitud internacional, a menos que se indique otra cosa en este punto.

Estos elementos estuvieron disponibles o fueron enviados a esta Administración en el siguiente lenguaje _____ el cual es:

- ☐ el lenguaje de la traducción enviada para propósitos de la búsqueda internacional (bajo Regla 23.1 (b)).
- ☐ el lenguaje de la publicación de la solicitud internacional (bajo Regla 48.3(b)).
- ☐ el lenguaje de la traducción entregada con propósitos del examen preliminar internacional (bajo Regla 55.2 y/o 55.3).

3. Respecto a cualquier **secuencia de nucleótido y/o amino ácidos** divulgada en la solicitud internacional, el examen preliminar internacional se llevó a cabo con base en el listado de secuencias:

- ☐ contenido en la solicitud internacional en forma escrita
- ☐ presentado junto con la solicitud internacional en forma legible por computador
- ☐ entregado posteriormente a esta Administración en forma legible por computador
- ☐ La declaración de que el listado de secuencias posteriormente entregado no va más allá de lo divulgado en la solicitud internacional originalmente presentada, ha sido entregada.
- ☐ La declaración de que la información grabada en la forma legible por computador es idéntica al listado de secuencias escrito que se ha entregado.

4. Las modificaciones han dado como resultado la cancelación de:

- ☐ la descripción, páginas _____,
- ☐ las reivindicaciones, Nos. _____,
- ☐ los dibujos, página _____.

5. ☐ Este reporte ha sido establecido como si (parte de) las modificaciones no se hubieran realizado, ya que éstas han sido consideradas como una ampliación de lo inicialmente divulgado como se indica en la Casilla Suplementaria (Regla 70.2(c)).

(Cualquier hoja de reemplazo que contenga dichas modificaciones deberá ser referida bajo el punto 1 y anexada a este informe)

6. Observaciones adicionales, en caso de ser necesario:

IV. Carencia de Unidad de Invención

1. En respuesta a la invitación a restringir o pagar tasas adicionales, el solicitante ha:
- ☐ Restringido las reivindicaciones.
 - ☐ Pagado tasas adicionales.
 - ☐ Pagado tasas adicionales bajo protesta.
 - ☐ Ni restringió ni pagó tasas adicionales.
2. ☒ Esta Autoridad encontró que el requisito de unidad de invención no se ha cumplido y escogió, de acuerdo con la Regla 68.1, no invitar al solicitante a restringir o a pagar tasas adicionales.
3. Esta Autoridad considera que el requisito de unidad de invención en concordancia con las Reglas 13.1, 13.2 y 13.3, se
- ☐ cumple.
 - ☒ no se cumple por las siguientes razones:

Ver hoja separada

4. En consecuencia, las siguientes partes de la solicitud internacional fueron sujetas de un examen preliminar internacional al establecer el presente informe:
- ☒ todas las partes
 - ☐ las partes relacionadas con las reivindicaciones Nos.:

V. Declaración motivada según el Artículo 35(2) en cuanto a la novedad, el nivel inventivo y la aplicación industrial; citas y explicaciones que apoyan esta declaración.

1. Declaración

Novedad (N)	Reivindicaciones	1 - 30	SI
	Reivindicaciones		NO
Nivel inventivo (NI)	Reivindicaciones	1 - 30	SI
	Reivindicaciones		NO
Aplicación industrial (AI)	Reivindicaciones	1 - 30	SI
	Reivindicaciones		NO

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2. Citas y explicaciones

Ver hoja separada

1) Esta Autoridad considera que hay dos (2) invenciones cubiertas por las reivindicadas indicadas a continuación:

- I: Reivindicaciones Independientes 1, 16: dispositivo y método en donde al menos un puesto de suministro esta provisto entre la pared del miembro de penetración y el borde de la abertura de salida.
- II: Reivindicación Independiente 4: dispositivo que comprende medios para controlar la deformación de la pared base del cartucho.

Dichas invenciones no están relacionadas de manera que formen un único concepto general inventivo, como se requiere bajo la Regla 13.1 del PCT.

2.1) En caso de entrada en fase regional ante la OPE, se le informa al solicitante es que la solicitud PCT **WO-A-02/076279** publicada el 03/10/2002 reivindica la prioridad de fecha de 13/03/2001. Se ha proporcionado a la Oficina de Patentes Europea en uno de sus idiomas oficiales y la tasa nacional establecida en el Artículo 22, párrafo 1 o Artículo 39, párrafo 1 del Tratado de Cooperación ha sido pagada. Los requerimientos del Artículo 158(2) EPC han sido así cumplidos.

Su contenido como se presentó se considera, por lo tanto, como que está comprendido en el estado del arte relevante para la pregunta sobre la novedad, de acuerdo con el Artículo 54(3) y (4) del EPC.

2.2) Esta solicitud anterior muestra (cf. Página 5, renglón 16 – página 7, renglón 20; figuras 1 – 2) un dispositivo y un método que comprenden todas las características de las reivindicaciones independientes **1 y 16**.

Adicionalmente, esta solicitud anterior muestra (cf. Página 7, renglón 21 – pagina 9, renglón 26; figuras 3 a 8) un dispositivo que comprende todas las características de la reivindicación independiente **4**.

Las características adicionales de las reivindicaciones dependientes **2, 7 – 10, 15 – 17, 22 – 25, 29, 30** también están divulgadas por dicha solicitud anterior.

Por lo tanto, dicha solicitud anterior es perjudicial para la novedad de la materia objeto de las reivindicaciones **1, 2, 4, 7 – 10, 15 – 17, 22 – 25, 29, 30** de la presente solicitud mientras que los mismos Estados Contratantes estén designados.

REIVINDICACIONES:**(Anexas al IPER)**

- 1- Un dispositivo para la preparación de una bebida a partir de un producto soluble, del tipo que comprende un cartucho descartable (1) que contiene el producto soluble (9), dicho cartucho que comprende al menos una abertura de salida para el suministro de una bebida que consiste de dicho producto soluble y un fluido, en donde dicho al menos una abertura de salida es definida por al menos una línea prefRACTURADA (5a) presentes sobre una pared (5) de dicho cartucho, dicho dispositivo que además comprende un dispositivo recolector (2) que tiene un asiento apropiado para recibir dicho cartucho descartable y en donde dicho dispositivo recolector que comprende un elemento de penetración (7) para penetrar dicho cartucho en correspondencia con dicha línea prefRACTURADA (5a), caracterizado porque comprende medios de regulación de la entrega de dicha bebida que comprende al menos un puerto de suministro (10) entre la pared de dicho miembro de penetración y el borde de dicha abertura de salida en forma tal que dicho producto soluble es entregado en al menos 75% del tiempo total de erogación de dicha bebida.
- 2- Un dispositivo, según lo reivindicado en 1, en donde dicha al menos una porción de enganche de dicho miembro de penetración es sustancialmente cilíndrica en su forma con una sección circular, y en donde dicha abertura de salida es sustancialmente circular en su forma.
- 3- Un dispositivo de acuerdo con la reivindicación 1 ó 2, en donde la sección de dicho puerto pasaje de erogación es sustancialmente en forma de corona circular, y en donde la relación R entre el diámetro de dicha abertura de salida y el diámetro de la porción de enganche de dicho miembro de penetración es $1 < R \leq 1,067$, preferiblemente $1 < R \leq 1,04$, más preferiblemente $1 < R \leq 1,02$.
- 4- Un dispositivo para la preparación de una bebida de un producto soluble, del tipo que comprende un dispositivo recolector (2) que tiene un asiento apropiado para recibir un cartucho descartable que contiene el producto soluble, dicho cartucho que comprende al menos una abertura de salida para el suministro de una bebida que consiste de dicho producto soluble y un fluido, en el cual dicho al menos una abertura de salida esta definida por una línea prefRACTURADA (5a) dispuesta en una pared (5) de dicho cartucho y en donde dicho dispositivo recolector (2) comprende al menos un miembro de penetración (7) para penetrar dicho cartucho (1) en correspondencia con dicha línea prefRACTURADA (5a) para formar al menos un pasaje de erogación de la bebida, caracterizado porque comprende medios para controlar la deformación de la pared base del cartucho (5) durante la etapa de dispensar de dicha bebida, dicho medio de control que comprende un elemento de soporte (11, 11^a, 13) que proporciona una limitación del ángulo de deformación del borde de la abertura del suministro de bebida (5a) que esta dentro del rango de 0° a 45° grados.

- 5- Un dispositivo, según lo reivindicado en 4, en donde la sección de dicho pasaje de suministro o erogación es sustancialmente en forma de corona circular, y en donde la relación R entre el diámetro de dicha abertura de suministro y el diámetro de la porción de enganche de dicho miembro de penetración es $1 < R \leq 1,067$, preferiblemente $1 < R \leq 1,04$, y más preferiblemente $1 < R < 1,02$.
- 6- Un dispositivo, según lo reivindicado en 1 o 5, en donde la sección de dicho pasaje de erogación tiene forma sustancialmente de corona circular, en la cual la relación R entre el diámetro de dicha abertura de suministro y el diámetro de la porción de vinculación de dicho miembro de penetración es $1 < R \leq 1,014$.
- 7- Un dispositivo, según lo reivindicado en 1 o 4, en donde dichos medios de regulación comprenden uno o más elementos de detención que limitan la deformación de una porción de la pared de dicho cartucho en proximidad de dicha abertura de salida.
8. Un dispositivo, según lo reivindicado en 1 o 4, en donde dichos medios comprenden al menos una porción de la pared de base de dicho cartucho, que es realizada en un material plástico con comportamiento visco-elástico.
- 9- Un dispositivo, según lo reivindicado en 7, en donde dichos uno o más elementos de detención comprenden una o más costillas las cuales dan soporte para dicho miembro de perforación.
- 10- Un dispositivo, según lo reivindicado en 7 o 9, en donde dichos uno o más elementos de detención comprenden al menos un miembro anular que tiene un diámetro mayor que dicha abertura de salida.
- 11- Un dispositivo, según lo reivindicado en 10, en donde dicho miembro anular presenta una porción de superficie inclinada hacia la pared de base de dicho cartucho.
- 12- Un dispositivo, según lo reivindicado en 11, en donde dicha porción de superficie inclinada tiene una inclinación entre 0° y 45° con respecto al plano horizontal soportado sobre dicho miembro anular.
- 13- Un dispositivo, según lo reivindicado en 11, en donde dicha porción de superficie inclinada tiene una inclinación entre 15° y 35° con respecto al plano horizontal soportado sobre dicho miembro anular.
- 14- Un dispositivo, según lo reivindicado en 11, en donde dicha porción de superficie inclinada tiene una inclinación de 30° con respecto al plano horizontal soportado sobre dicho miembro anular.

- 15- Un procedimiento para la preparación de una bebida a partir de un producto soluble (9), contenido en un cartucho descartable (1), en donde dicho cartucho está alojado en el asiento de un dispositivo recolector (2) que tiene al menos un miembro de penetración (7) para abrir una abertura de salida desde dicho cartucho, siendo dicha abertura definida por al menos por una línea prefracturada (5a) presente en una pared (5) de dicho cartucho, y en donde el ingreso de un fluido a de dicho cartucho es provisto a través de un pasaje de entrada del mismo a efectos de obtener la erogación de una bebida consistente de dicho producto soluble y dicho fluido, caracterizado porque provee la regulación de la erogación de dicha bebida por medio de al menos un pasaje de suministro (10) entre la pared (5) de dicho miembro de penetración y el borde (5a) de dicha abertura de salida de manera que dicho producto soluble es suministrado durante al menos 75% del tiempo del total de erogación.
- 16- Un procedimiento, según lo reivindicado en 15, en donde la regulación de la erogación es efectuada por medio de al menos un pasaje de suministro dispuesto entre la pared de dicho miembro de perforación y el borde de dicha abertura de salida.
- 17- Un procedimiento, según lo reivindicado en 15 o 16, en donde dicha al menos una porción de enganche de dicho medio de perforación es de forma sustancialmente cilíndrica con una sección circular y en donde dicha abertura de salida es de forma sustancialmente circular.
- 18- Un procedimiento, según lo reivindicado en 16 o 17, en donde la sección de dicho pasaje de suministro es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de enganche de dicho miembro de penetración es $1 < R \leq 1,067$.
- 19- Un procedimiento, según lo reivindicado en 16 o 17, en donde la sección de dicho pasaje de suministro es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de enganche de dicho miembro de penetración es $1 < R \leq 1,04$.
- 20- Un procedimiento, según lo reivindicado en 16 o 17, en donde la sección de dicho pasaje de suministro es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de enganche de dicho miembro de penetración es $1 < R \leq 1,02$.
- 21- Un procedimiento, según lo reivindicado en 16 o 17, en donde la sección de dicho pasaje de suministro es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de enganche de dicho miembro de penetración es $1 < R \leq 1,014$.

- 22- Un procedimiento, según lo reivindicado en 15, en donde la regulación de la erogación es efectuada por medio de uno o más elementos de detención para limitar la deformación de una porción de pared de dicho cartucho en proximidad de dicha abertura de salida.
- 23- Un procedimiento, según lo reivindicado en 15, en donde dicha abertura de salida es cortada en la pared de base de dicho cartucho.
- 24- Un procedimiento, según lo reivindicado en 22 o 23, en donde dichos uno o más elementos de detención comprenden una o más costillas que soportan dicho miembro de penetración.
- 25- Un procedimiento, según lo reivindicado en 22 o 23, en donde dichos uno o más elementos de detención comprenden una o más miembros anulares que tienen un diámetro mayor que el de dicha abertura de salida.
- 26- Un procedimiento, según lo reivindicado en 25, en donde dicho miembro anular tiene una porción de superficie inclinada hacia la pared de base de dicho cartucho.
- 27- Un procedimiento, según lo reivindicado en 26, en donde dicha porción de superficie inclinada tiene una inclinación entre 0° y 45° con respecto al plano horizontal soportado sobre dicho miembro anular.
- 28- Un procedimiento, según lo reivindicado en 26, en donde dicha porción de superficie inclinada tiene una inclinación entre 15° y 35°, y preferiblemente de 30° con respecto a un plano horizontal soportado sobre dicho miembro anular.
- 29- Un procedimiento, según lo reivindicado en 15, caracterizado porque dicha deformación es controlada mediante el empleo de material plástico con un comportamiento visco-elástico para la producción de dicho cartucho.
- 30- Cartucho descartable para la preparación de una bebida a partir de un producto soluble en un dispositivo para preparación de bebida de acuerdo con cualquiera de las reivindicaciones 1 a 16 o para llevar a cabo un método de acuerdo con cualquiera de las reivindicaciones 15 a 29.

PROCEDIMIENTO Y DISPOSITIVO PARA LA PREPARACION DE BEBIDAS A PARTIR DE PRODUCTOS SOLUBLES

Ambito de aplicación del presente invento:

El presente invento es relativo a un dispositivo y a un procedimiento para la preparación de bebidas a partir de productos solubles contenidos dentro de cartuchos descartables. En particular, el presente invento se refiere a la preparación de bebidas efectuada en máquinas provistas con un dispositivo colector diseñado para recibir un cartucho conteniendo un producto soluble a efectos de lograr producir una bebida caliente, tal como café capuchino, té, o lo similar.

Estado anterior del arte:

En las máquinas conocidas, los grupos designados para la preparación y erogación de bebidas generalmente comprenden un dispositivo colector que tiene un asiento que recibe un *cartucho descartable*.

Puesto que los cartuchos descartables son sellados en origen para evitar el derrame del producto soluble durante su manipuleo, el dispositivo colector es usualmente provisto con un miembro perforador que abre una o más aberturas sobre una pared del cartucho (por ejemplo, sobre la pared de base del cartucho) en correspondencia con una pluralidad de líneas de fractura preestablecidas.

Una vez que el cartucho ha sido insertado en el asiento adecuado en el dispositivo colector, se admite el ingreso de agua caliente bajo presión en el interior del cartucho a través de una de sus aberturas de entrada a efectos de formar una bebida consistente en una suspensión o dispersión o una solución en agua del producto soluble, cuya bebida es entregada a través de un pasaje de salida u orificio ubicado sobre el referido cartucho.

Un grupo dispensador adecuado debe garantizar la completa y uniforme

solubilización o suspensión/dispersión del producto en el fluido (usualmente agua) dentro del cartucho y un aspecto final adecuado de la bebida así lograda; en el caso del café y del capuchino, una apariencia final adecuada significa un aspecto "cremoso", es decir, que tenga una apreciable cantidad de una duradera capa de espuma compuesta por pequeñas burbujas. Obtener tal resultado es complicado por el hecho que las formas y dimensiones del cartucho son las mismas para todos los productos dispensados, mientras que la cantidad de producto soluble en el cartucho varía en forma dramática de producto en producto (por ejemplo, 1,5 gr para el café expreso y 15 a 16 gr de producto para el chocolate y el capuchino). Esta variación en la cantidad del producto puede hacer que sea dificultoso obtener una bebida homogéneamente solubilizada:suspendida. Otro problema hallado en los grupos dispensadores o erogadores conocidos consiste en garantizar una meticulosa higiene y limpieza del grupo erogador; esto requiere tener que evitar el uso de conductos y tuberías erogadoras con una sección inferior a los 2 mm, debido al riesgo de formación de depósitos y residuos dentro de los mismos.

En una solicitud de patente del mismo solicitante, aun pendiente y sin publicar, se ha sugerido proveer una restricción en la sección a lo largo del recorrido de erogación de la bebida, con el objeto de mejorar el mezclado del producto soluble con el agua admitida dentro del cartucho, y de crear un gradiente de presión dentro del cartucho de manera de obtener una bebida de buena calidad y un aspecto atractivo en el momento de su entrega. Esto ha sido logrado por medio de un miembro de penetración que tiene un diámetro mayor que el diámetro de la abertura para el producto: la presión del agua al llegar al cartucho determina la solubilización y entrega de la bebida.

De todas formas ha sido hallado que la bebida obtenida no siempre es óptima, en particular con respecto a la cantidad y duración de la crema producida.

Breve reseña del invento:

El objeto del presente invento consiste entonces en producir un dispositivo

y un procedimiento para la preparación de bebidas capaz de garantizar resultados óptimos y consistentes desde el punto de vista de la calidad de la bebida así obtenida.

Este objetivo es logrado mediante el presente invento por medio de un dispositivo para la preparación de bebidas de acuerdo a la primera reivindicación, Construcciones particulares del dispositivo según el invento son ilustradas en las reivindicaciones dependientes desde la n° 2 hasta la reivindicación 15.

De acuerdo a un primer aspecto del presente invento, el dispositivo para la preparación de bebidas comprende medios reguladores de la erogación de la bebida de manera tal que el producto soluble es entregado bajo forma de suspensión por lo menos el 75% del total del tiempo de erogación o entrega.

De acuerdo a otro aspecto del invento, los medios de regulación comprenden uno o más pasajes de entrega o erogación entre el miembro de penetración y la abertura de salida practicada en el cartucho.

En una ejecución preferida, el pasaje de entrega o erogación tiene una sección sustancialmente en forma de corona circular, y la relación R entre el diámetro de la abertura en el cartucho y el diámetro de la sección de vinculación del miembro de penetración es $1 < R \leq 1,067$, preferiblemente $1 < R \leq 1,04$, más preferiblemente $1 < R \leq 1,02$, y aun más preferiblemente $1 < R \leq 1,014$. Por ejemplo, si fijamos el diámetro D_2 del miembro, de penetración en 15mm., esto proporciona un diámetro D_1 para la abertura en el cartucho que define el pasaje de entrega o erogación del cartucho con un rango de valores $15 < D_1 \leq 16\text{mm}$, más preferible entre $15 < D_1 \leq 15,6\text{mm}$, aun más preferiblemente $15 < D_1 \leq 15,3\text{mm}$ y aun más preferiblemente $15 < D_1 \leq 15,2\text{mm}$.

En otra posible ejecución del invento, adoptable como alternativa o en combinación con la ejecución anteriormente citada, los medios de regulación comprenden uno o más elementos de tope o fin de carrera para limitar la deformación de una porción de pared del cartucho en adyacencias a la abertura

de salida o erogación.

Tales elementos de tope comprenden por ejemplo: uno o más soportes para el miembro de penetración, o un miembro anular que tiene un diámetro mayor que el de la abertura de salida o erogación.

En este último caso, el miembro anular tiene una porción de superficie inclinada hacia el miembro de penetración y hacia la pared de base del cartucho, con una inclinación entre 1° y 45° con respecto un plano horizontal soportado sobre el miembro anular, más preferiblemente con una inclinación entre 15° y 38° , y aun más preferiblemente con una pendiente igual a 30° con respecto del plano horizontal soportado sobre el miembro anular.

De acuerdo con un segundo aspecto del presente invento, se provee un procedimiento para la preparación de bebidas según se lo especifica en la reivindicación n° 16. Ulteriores características favorables del citado procedimiento según el presente invento son ilustradas en las reivindicaciones dependientes n° 17 a la n° 30.

El dispositivo dispensador de acuerdo al presente invento posee numerosas ventajas. Los pasajes de erogación o salida que dispensan la bebida y que se forman, durante la etapa de erogación entre el cartucho y el miembro de penetración, tienen un diámetro reducido y constituyen una reducción temporada del pasaje del líquido, es decir, una restricción o estrangulamiento del paso de fluido que es eliminado en cada entrega cuando es retirado el cartucho, y que es nuevamente recreada en cada nueva subsiguiente erogación de la bebida cuando es insertado un nuevo cartucho en el dispositivo colector-perforador. Ulteriores ventajas son la solubilización/dispersión/suspensión homogénea y uniforme del producto y la producción de una bebida con un óptimo aspecto.

Breve descripción de los dibujos :

Ulteriores características y ventajas del presente invento se tornarán más claras a partir de la siguiente descripción dada a mero título de ejemplo no limitativo, y con referencia a los adjuntos dibujos esquemáticos en los cuales:

- La Figura 1 es una vista en perspectiva de un cartucho que puede ser empleado sobre un dispositivo dispensador o erogador, de acuerdo al presente invento;
- La Figura 2 es una vista en corte del cartucho de la Figura 1;
- La Figura 3 es una vista en perspectiva de un dispositivo perforador-colector;
- La Figura 4 es una vista en corte del dispositivo perforador-colector de la Figura 3, con un cartucho de la Figura 1 insertado dentro del mismo y perforado;
- La Figura 5 es una vista en corte de un ulterior tipo de dispositivo colector-perforante previsto con un aro de control de deformación;
- La Figura 6 es una vista en planta del dispositivo colector-perforador de la Figura 5;
- Las Figuras 7 y 8 son una vista en planta y una vista ampliada, respectivamente, de dos posibles ejecuciones de la abertura de salida o erogación del producto o bebida en el cartucho; y
- La Figura 9 es una vista similar a la de la Figura 5 de ulteriores medios para controlar la deformación.

Modos de ejecución del presente invento:

Con referencia a las Figuras 1 a 3, el dispositivo erogador de acuerdo al presente invento comprende un cartucho descartable (1) y un dispositivo colector-perforante (2). El cartucho (1) es equipado con una superficie superior con una abertura (4) circundada por una brida o saliente anular (3), y por una pared de base inferior (5) sobre la cual una línea de pre-fractura (5a) es cortada de manera de definir una salida para el producto solubilizado. La abertura superior (4) es cerrada en forma conocida por una tapa o cubierta (no ilustrada) provista con uno o más orificios de entrada para el agua de infusión, solubilización o dispersión-suspensión. En forma conocida, la línea de fractura (5a) consiste en una porción

linear curvada de la pared de base que tiene un espesor reducido y tal que pueda ser fácilmente quebrable por un cilindro perforante (7) del dispositivo colector (2); la línea (5a) es interrumpida en correspondencia de una porción (6) que constituye una porción de bisagra (8) de la pared de base (referida como "tapa") definida por la línea (5a) y que previene la separación de la misma del resto de la pared de base (5) luego que el cartucho ha sido vinculado al dispositivo perforador-colector (2). (Ver la Figura.4).

En dicha Figura 4 se muestra un cartucho (1) en una posición de erogación, es decir, en la posición en la cual este ha sido conectado o vinculado por el cilindro (7), el cual ocasiona la apertura de la pared de base (5) a lo largo de la línea de fractura (5a) y la rotación de la porción de base (8) hacia el interior del cartucho, formando de esta manera la correspondiente abertura. El producto soluble a ser erogado o entregado es delineado e indicado por la referencia (9).

Según el presente invente, las dimensiones del cilindro perforante (7) y de la porción (8) de la pared de base (5) son tales que cuando el cartucho es insertado en el cilindro (7), antes de alimentar agua caliente bajo presión, existe por lo menos un pasaje o espacio (10) entre la pared de base (5) y el miembro perforante (7) para permitir la salida del producto solubilizado, o dispersado o suspendido. El pasaje o espacio (10) es preferiblemente provisto bajo forma de una corona circular (Ver Figura 7), es decir una única abertura que se extiende sustancialmente alrededor del perímetro del cilindro (7). Sin embargo, son posibles otras ejecuciones de la abertura que permiten diferentes formas y/o la presencia de más pasajes entre la pared de base (5) y el cilindro (7). Empleando una línea elipsoidal (5a) es posible producir, por ejemplo, dos pasajes o espacios: si el eje menor de la elipse es igual o menor que el diámetro D2 del cilindro (7) (Ver Figura 8), se obtiene dos pasajes separados por dos puntos de contacto entre la abertura en la base y el cilindro (7); si el eje menor de la elipse es mayor que el diámetro D2 se obtiene un pasaje continuo y no circular alrededor del cilindro (7).

En general, la diferencia máxima entre la línea (5a) que forma el borde de la abertura sobre la pared de base (5) y la pared del cilindro (7) es comprendida en el

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intervalo entre 0,4 y 1,5mm, preferiblemente 1,5mm. En todo caso, el área total de la abertura es tal de permitir la regulación de la entrega de la bebida de manera de producir la entrega simultánea de agua y producto por lo menos por el 75% del tiempo en el cual se dispensa o eroga el agua. Esta erogación simultánea puede ser regulada visualmente observando el color del líquido saliente de la salida del cartucho: si el líquido es poco coloreado o sustancialmente incoloro no hay una erogación simultánea en el sentido arriba indicado. En la práctica, se ha hallado que los resultados son obtenidos cuando el tamaño del medio perforante y de la abertura difieren muy poco (por ejemplo, cuando dos circunferencias son prácticamente iguales y difieren por 0,01mm) mientras existan espacios o luces de salida (10), aun cuando estas sean extremadamente pequeñas.

Por lo tanto es objeto del invento un dispositivo dispensador de una bebida soluble del tipo arriba indicado, en el cual la relación entre el área del medio perforante (7) y el área definida por la línea pre-fracturada (5a) es comprendida entre 1,0 y 1,284, pero excluyendo una relación de 1,0 y con la mayor magnitud del espacio entre la línea (5a) [borde de la abertura sobre la pared de base (5)] y la pared del miembro perforante (7) comprendida en el intervalo entre 0,4mm y 1,5mm. Por "área del elemento perforante (7)" se entiende el área de la sección del miembro perforante (7) tomada a la altura de la pared de base (5) del cartucho (1) cuando este es alojado en el dispositivo colector (2).

En la siguiente descripción, se hace referencia a una ejecución preferida en la cual el miembro (7) y la línea (5a) son ambas circulares (Ver Figura 7). En esta ejecución, la separación o luz (10), es decir, el pasaje de erogación o entrega de la bebida, tiene sustancialmente forma de sección de corona y la relación R entre el diámetro ϕ_1 de dicho pasaje de erogación (10) y el diámetro D2 del miembro perforante (7) se halla comprendido entre 1,001 y 1,04, preferiblemente entre 1,001 y 1,02 y más preferiblemente entre 1,001 y 1,014.

Como se ha indicado más arriba, el cartucho (1) es generalmente realizado en material plástico, por ejemplo en un homo- o co-polímero de etileno o propileno adecuado para su uso con alimentos. Un material preferido tiene una cristalinidad

mayor del 70% y un porcentaje de polímero amorfo tal de otorgar una deformación visco-elástica de la pared de base del cartucho durante la alimentación bajo presión del agua caliente. El término "deformación visco-elástica" significa que la deformación del material de la pared de base, por lo menos en un área alrededor del borde de la abertura sobre la pared de base (5) a lo largo de la línea (5a), es reducida o prácticamente eliminada ya sea al finalizar la erogación o en una o más etapas durante la erogación. En otras palabras, durante la etapa de entrega o erogación de la bebida, el material de la pared de base, por lo menos alrededor de dicho pasaje de salida, se opone a la deformación ocasionada por el agua u otro líquido alimentado bajo presión dentro del cartucho; De esta forma, la extensión de la deformación y por lo tanto de las dimensiones del pasaje de entrega (10) es controlada durante el suministro o erogación de la bebida. Las técnicas de moldeo del material serán elegidas de manera de conservar lo más posible el porcentaje de polímero amorfo en el producto final. Los materiales adecuados son elegidos a partir de los (co)polímeros de etileno y propileno, por ejemplo, (co)polímeros de propileno que comprende una o más alfa-olefinas que tienen 2 a 10 átomos de C, por ejemplo, etileno, 1-buteno, 1-penteno, 4-metil-1-penteno, 1-hexeno, 1-octeno; formulaciones de propileno obtenido por polimerización secuencial de propileno y sus mezclas con etileno y/o alfa-olefinas. Los (co)polímeros generalmente tienen un Índice de Fusión entre 0,2 y 60 a 230°C/21,6N. De todas formas, pueden ser empleados cartuchos que sufran una deformación plástica de su pared de base siguiendo una alimentación bajo presión de agua caliente. En este caso el efecto visco-elástico arriba citado de oposición a la deformación del material mismo no tendrá lugar y son empleados "medios mecánicos" a efectos de limitar la extensión de la deformación de la pared de base. Las Figuras 5 y 6 muestran una ejecución preferida de tales medios, constituidos por un anillo (12) dispuesto concéntricamente al cilindro perforante (7) y distanciado del mismo. El anillo (12) es sostenido por tres nervaduras o costillas (11) y preferiblemente tiene una porción de superficie (13) inclinada hacia el cilindro (7), es decir, hacia el interior del dispositivo (2), y hacia la pared de base. La inclinación de la porción de superficie superior (13) está por lo tanto comprendida en el intervalo entre 0 y 45°, preferiblemente entre 15° y 38° y más preferiblemente aun en 30° respecto de la

horizontal.

Como alternativa al anillo (12), se puede emplear aletas o costillas radiales (11a) (Ver Figura 9) que se extienden a la altura de la superficie (13) del anillo (12) y que tienen una porción de su superficie superior perfilada en forma semejante a la superficie inclinada (13) del anillo y similarmente distanciada del miembro (7).

Es por lo tanto objeto del presente invento un dispositivo dispensador o erogador del tipo arriba citado, en el cual se proveen medios para controlar la deformación de la pared de base del cartucho de distribución de la bebida. Tales medios están constituidos por un material polimérico de construcción del cartucho que introduce una deformación sustancialmente visco-elástica y/o medios mecánicos de soporte tal como un anillo o aletas o nervaduras o costillas de soporte sobre la pared de base. En ambos casos la extensión del ángulo de deformación del material que rodea el borde (5a) del pasaje de entrega de producto es mantenida dentro de un intervalo entre 0° y 45° , preferiblemente entre 15° y 38° y más preferiblemente alrededor de 30° durante la erogación de la bebida.

El invento será ahora adicionalmente descrito con referencia a los siguientes ejemplos dados meramente a título de ejemplo:

Ejemplos:

Grupo 1 :

Diez (10) café fueron servidos desde una máquina dispensadora de bebidas calientes marca "Tuttoespresso" con un dispositivo colector sobre el cual se instaló un cilindro perforador de diámetro D2 de 14,7mm, un diámetro de abertura de cartucho D1 de 15mm. El cartucho empleado fue hecho en co-polímero de etileno con una deformación visco-elástica sustancial de la pared de base.

Grupo 2:

Otros diez (10) café fueron erogados con cartuchos similares, pero realizados en co-polímero de etileno con un elevado contenido cristalino y deformación plástica de la pared de base del cartucho. El dispositivo colector tiene un anillo de soporte inclinado 300 en el interior y base de dicho dispositivo.

Grupo 3:

A efectos comparativos, se dispensaron diez (10) café bajo las mismas condiciones y desde la misma maquina empleando cartuchos tradicionales y un dispositivo colector ya conocido.

La evaluación fue efectuada midiendo el volumen (cm) de la crema obtenida. Los resultados muestran un promedio de 12,8 cc de crema por cada café erogado en el Grupo1, un promedio de 9,6 cc de crema para los café dispensados en el Grupo2, y un promedio de 6,8 cc de crema por cada café dispensado en el Grupo 3 (café del arte previo tradicional).

REIVINDICACIONES:

- 1- **DISPOSITIVO PARA LA PREPARACION DE BEBIDAS A PARTIR DE PRODUCTOS SOLUBLES**, del tipo que comprende un dispositivo colector que tiene un asiento, adecuado para recibir un cartucho¹ descartable que contiene el producto soluble, comprendiendo dicho cartucho por lo menos una abertura^u de salida para la entrega de la bebida consistente de dicho producto soluble y un fluido, donde por lo menos dicha abertura de salida es definida por lo menos por una línea pre-fracturada^{sq} presente sobre una pared^s de dicho cartucho, comprendiendo dicho dispositivo colector por lo menos un miembro de penetración^f, que define la apertura de la abertura en dicho cartucho en correspondencia con dicha línea pre-fracturada, caracterizado porque comprende medios de regulación de la entrega de dicha bebida en forma tal que dicho producto soluble es entregado en por lo menos el 75% del tiempo total de erogación de dicha bebida.
- 2- **DISPOSITIVO**, según lo reivindicado en 1, caracterizado porque dichos medios de regulación comprenden por lo menos una pasaje de entrega de la citada bebida, siendo dicho pasaje definido entre la pared de dicho miembro de penetración y el borde de dicha abertura.
- 3- **DISPOSITIVO**, según lo reivindicado en 1 o 2, caracterizado porque por lo menos una porción de vinculación de dicho miembro de penetración es sustancialmente cilíndrica con una sección circular, siendo dicha abertura de forma sustancialmente circular.
- 4- **DISPOSITIVO**, según, lo reivindicado en 2 o 3, caracterizado porque la sección transversal de dicho pasaje de erogación es sustancialmente en forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de vinculación dicho miembro de penetración es $1 < R \leq 1,067$, preferiblemente $1 < R \leq 1,04$, más preferiblemente $1 < R \leq 1,02$.

- 5- **DISPOSITIVO**, según lo reivindicado en 1 a 4, caracterizado porque comprende medios para controlar la deformación de la base del cartucho durante la etapa de erogación de dicha bebida.
- 6- **DISPOSITIVO**, según lo reivindicado en 5, caracterizado porque la sección de dicho pasaje de entrega o erogación es sustancialmente en forma de corona circular, en donde la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de vinculación de dicho miembro de penetración es $1 < R \leq 1,067$, preferiblemente $1 < R \leq 1,04$, y más preferiblemente $1 < R < 1,02$.
- 7- **DISPOSITIVO**, según lo reivindicado en 2 o 6, caracterizado porque dicho pasaje de erogación tiene forma sustancialmente de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de vinculación de dicho miembro de penetración es $1 < R \leq 1,014$.
- 8- **DISPOSITIVO**, según lo reivindicado en 1 o 5, caracterizado porque dichos medios de regulación comprenden uno o más elementos de tope o fin de carrera que determinan la limitación de la deformación de una porción de pared de dicho cartucho en adyacencias de dicha abertura para la salida de la bebida.
9. **DISPOSITIVO**, según lo reivindicado en 1 o 5, caracterizado porque dichos medios comprenden por lo menos una porción de la pared de base de dicho cartucho, realizada en un material plástico con comportamiento visco-elástico.
- 10- **DISPOSITIVO**, según lo reivindicado en 8, caracterizado porque dichos por lo menos un elemento de tope o fin de carrera comprenden una o más aletas o costillas que determinan un soporte para dicho medio perforante.

- 11- **DISPOSITIVO**, según lo reivindicado en 8 o 10, caracterizado porque dichos por lo menos un elemento de tope o fin de carrera comprende por lo menos un miembro anular que tiene un diámetro mayor que el diámetro de la abertura de salida practicada en dicho cartucho.
- 12- **DISPOSITIVO**, según lo reivindicado en 11, caracterizado porque dicho miembro anular presenta una porción de superficie inclinada hacia la pared de base de dicho cartucho.
- 13- **DISPOSITIVO**, según lo reivindicado en 12, caracterizado porque dicha porción de superficie inclinada posee una inclinación entre 0° y 45° con respecto al plano horizontal soportado sobre dicho miembro anular.
- 14- **DISPOSITIVO**, según lo reivindicado en 12, caracterizado porque dicha porción de superficie inclinada posee una inclinación entre 15° y 35° con respecto al plano horizontal soportado sobre dicho miembro anular.
- 15- **DISPOSITIVO**, según lo reivindicado en 12, caracterizado porque dicha porción de superficie inclinada posee una inclinación de 30° con respecto al plano horizontal soportado sobre dicho miembro anular.
- 16- **PROCEDIMIENTO PARA LA PREPARACION DE UNA BEBIDA A PARTIR DE UN PRODUCTO SOLUBLE**, empleando el dispositivo reivindicado en 1 a 15, en el cual dicho cartucho es alojado en un asiento de un dispositivo colector que tiene por lo menos un miembro de penetración capaz de abrir una abertura de salida en dicho cartucho, siendo dicha abertura definida por lo menos por una línea de pre-fractura presente sobre la pared de dicho cartucho, y en donde el ingreso de un fluido dentro de dicho cartucho es provisto a través de un orificio de entrada a efectos de obtener la erogación de una bebida consistente de dicho producto soluble y dicho fluido, caracterizado porque provee la regulación de la erogación de dicha bebida de manera que dicho producto soluble se entregue durante por lo menos el 75% del tiempo del total de dicho tiempo de erogación.

- 17- **PROCEDIMIENTO**, según lo reivindicado en 16, caracterizado porque la regulación de la erogación es efectuada por medio de por lo menos un pasaje de entrega dispuesto entre la pared de dicho miembro perforante y el borde de dicha abertura de salida.
- 18- **PROCEDIMIENTO**, según lo reivindicado en 16 o 17, caracterizado porque por lo menos dicha por lo menos una porción de vinculación de dicho medio perforante es de forma sustancialmente cilíndrica y en donde dicha abertura de salida es de forma sustancialmente circular.
- 19- **PROCEDIMIENTO**, según lo reivindicado en 17 o 18 caracterizado porque dicho pasaje de erogación es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de vinculación de dicho miembro de penetración es $1 < R \leq 1,067$.
- 20- **PROCEDIMIENTO**, según lo reivindicado en 17 o 18 caracterizado porque dicho pasaje de erogación es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de vinculación de dicho miembro de penetración es $1 < R \leq 1,04$.
- 21- **PROCEDIMIENTO**, según lo reivindicado en 17 o 18 caracterizado porque dicho pasaje de erogación es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de vinculación de dicho miembro de penetración es $1 < R \leq 1,02$.
- 22- **PROCEDIMIENTO**, según lo reivindicado en 17 o 18 caracterizado porque dicho pasaje de erogación es sustancialmente de forma de corona circular, en la cual la relación R entre el diámetro de dicha abertura de erogación y el diámetro de la porción de vinculación de dicho miembro de penetración

es $1 < R \leq 1,014$.

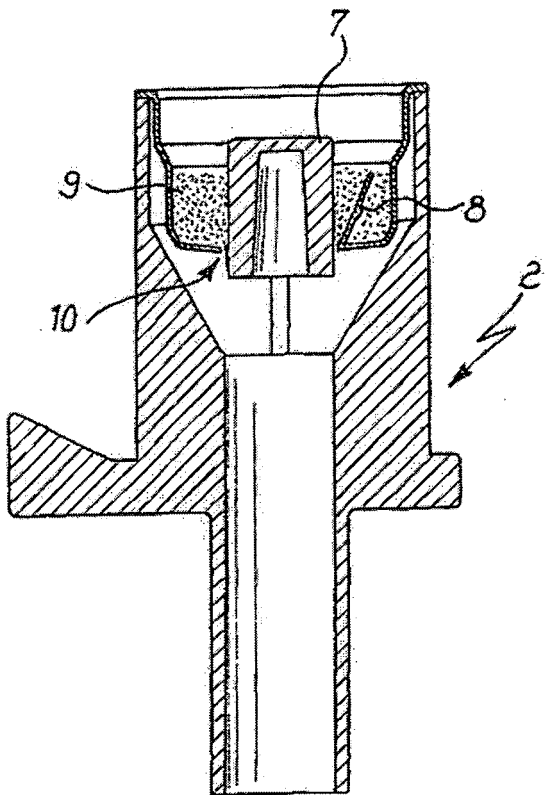
- 23- **PROCEDIMIENTO**, según lo reivindicado en 16, caracterizado porque la regulación de la erogación de la bebida es efectuada por medio de uno o más medios de tope o fin de carrera a efectos de limitar la deformación de una porción de pared de dicho cartucho en adyacencias de dicho pasaje de salida.
- 24- **PROCEDIMIENTO**, según lo reivindicado en 16, caracterizado porque dicha abertura de salida es cortada en la pared de base de dicho cartucho.
- 25- **PROCEDIMIENTO**, según lo reivindicado en 23 o 24, caracterizado porque dichos por lo menos un elemento de tope o fin de carrera comprende una o más aletas que soportan dicho miembro de penetración.
- 26- **PROCEDIMIENTO**, según lo reivindicado en 23 o 24, caracterizado porque dichos por lo menos un elemento de tope o fin de carrera comprende uno o más miembros anulares que tiene un diámetro mayor que el de dicha abertura de salida.
- 27- **PROCEDIMIENTO**, según lo reivindicado en 26, caracterizado porque dicho miembro anular posee una porción de superficie inclinada hacia la pared de base de dicho cartucho.
- 28- **PROCEDIMIENTO**, según lo reivindicado en 27, caracterizado porque dicha porción de superficie inclinada posee una inclinación entre 0° y 45° con respecto al plano horizontal soportado sobre dicho miembro anular.
- 29- **PROCEDIMIENTO**, según lo reivindicado en 27, caracterizado porque dicha porción de superficie inclinada pose una inclinación entre 15° y 35° , y preferiblemente de 30° con respecta a un plano horizontal soportado sobre dicho miembro anular.

- 30- **PROCEDIMIENTO**, según lo reivindicado en 16, caracterizado porque dicha deformación es controlada mediante el empleo de material plástico con un comportamiento visco-elástico durante la producción de dicho cartucho.
- 31- **CARTUCHO DESCARTABLE PARA LA PREPARACION DE UNA BIBIDA A PARTIR DE UN PRODUCTO SOLUBLE**, para su empleo en un dispositivo para la preparación de una bebida soluble, caracterizado por ser dicho dispositivo según lo reivindicado en cualquiera de las reivindicaciones 1 a 15 y para la ejecución del procedimiento de obtención de dicha bebida según lo reivindicado en cualquiera de las reivindicaciones 16 a 30.

COLO 14525-841-003-7

RESUMEN DEL INVENTO

PROCEDIMIENTO Y DISPOSITIVO PARA LA PREPARACION DE BEBIDAS A PARTIR DE PRODUCTOS SOLUBLES, que incluye un producto soluble contenido en un cartucho descartable, basado en la regulación de la erogación de la bebida de manera tal que el producto soluble es erogado en suspensión por lo menos por el 75% del tiempo total de erogación.



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SUPERINDUSTRIA Y COMERCIO
Radicacion : 85842332 88888888 Folios: 34
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Tramite : 811 PCT-PATENT 379 FASE MACI 411 PRESENTA
Dependencia: 2028 DIVISION DE NUEVAS CREACIONES

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 05 - 29,752
FECHA : ABRIL 25 DE 2005

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOSADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	40114849	25/04/2005	48,275,660.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN	443,000.00
		TOTAL :	\$ 443,000.00

SON: CUATROCIENTOS CUARENTA Y TRES MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

066 14525-841-0037

95

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Dependencia: 2028 DIVISION DE NUEVAS CREACIONES

REQUISITOS NECESARIOS PARA PRESENTACION Y AGILIZACION DEL TRAMITE

	USUARIO	RADICADOR
PATENTE DE INVENCION ✓	()	(✓)
MODELO DE UTILIDAD	()	(✓)
- Indicación de que se solicita la concesión de una patente.	()	(✓)
- Datos de identificación del solicitante o de la persona que se presenta la solicitud.	()	(✓)
- Descripción de la invención.	()	(✓)
- Dibujos de ser estos pertinentes. ✓	()	(✓)
- Comprobante de Pago de las tasas establecidas.	()	()
COMPLETA ()	INCOMPLETA ()	()
DISEÑO INDUSTRIAL ()		
- Indicación de que se solicita el registro de Diseño Industrial	()	()
- Datos de identificación del solicitante o de la persona que presenta la solicitud.	()	()
- Representación gráfica o fotográfica del Diseño Industrial o muestra del Material que incorpora el diseño.	()	()
- Comprobante de pago de las tasas establecidas	()	()
COMPLETA ()	INCOMPLETA ()	()
ESQUEMA DE TRAZADO ()		
- Indicación de que solicita el registro de un Esquema de trazado.	()	()
- Datos de Identificación del solcitante o de la persona que presenta La solicitud.	()	()
- Representación gráfica del esquema de trazado	()	()
- Comprobante de pago de las tasas establecidas.	()	()
COMPLETA ()	INCOMPLETA ()	()

Firma Responsable:

Claudia M Nueva

Fecha: