

FORM 1

601967^{04/2/87}

REGULATION 9

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

We, SOCIETE DES PRODUITS NESTLE S.A., a Swiss body corporate of Vevey, Switzerland, hereby apply for the grant of a Standard Patent for an invention entitled:-

"A DEVICE FOR THE EXTRACTION OF CARTRIDGES"

which is described in the accompanying Complete Specification.

Details of basic application:-

Number: 1668/86-0

Country: SWITZERLAND

Date: 24th April, 1986

RECEIVED
9-7-90

Our address for service is:

SHELSTON WATERS
55 Clarence Street
SYDNEY, N.S.W. 2000.

DATED this 18th day of March, 1987

SOCIETE DES PRODUITS NESTLE S.A.

by *P. Halliwell*

Flow Institute of Patent Attorneys of Australia
of SHELSTON WATERS

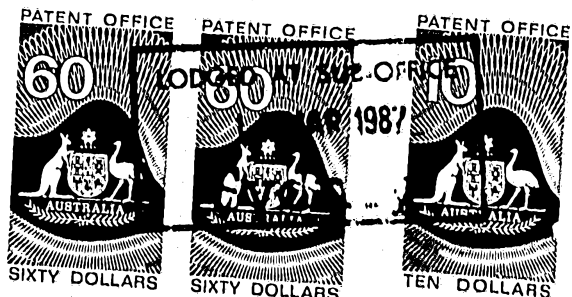
To: The Commissioner of Patents
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18 MAR 1987
Sydney



COMMONWEALTH OF AUSTRALIA PATENTS ACT, 1952-1973
DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT

In support of the Convention Application No. made
(a) Here Insert (In full) Name of Company. by ^(a) Société des Produits Nestlé S.A.

(b) Here Insert Title of Invention. (b) "A device for the extraction of cartridges"

(c) and (d) Here Insert Full Name and Address of Company Official authorised to make declaration. (c) Andrzej W. Ledzion
(d) En la Priauraz, 1807 Blonay, Switzerland

do solemnly and sincerely declare as follows:

1. I am authorised by Applicant to make this declaration on its behalf.
2. The basic Application(s) as defined by section 141 of the Act was/were made
(e) Here Insert Basic Country or Countries followed by date or dates of Basic Application(s). in ^(e) Switzerland on the 24th day of April 1986.

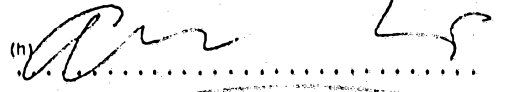
(f) Here Insert Full Name(s) of Applicant(s) in Basic Country. by ^(f) Société des Produits Nestlé S.A.
(g) Here Insert (In full) Name and Address of ac.ua, Inventor or Inventors. 3. ^(g) Eric FAVRE, of La Cadette, 1041 Saint-Barthelemy, Switzerland, and Petr MASEK, of Rue d'Entremonts 24, of 1400 Yverdon, Switzerland

..... is/are the actual Inventor(s) of the invention and the facts upon which Applicant is entitled to make the Application are as follows:
Applicant is the Assignee of the said Inventor(s).

4. The basic Application(s) referred to in paragraph 2 of this Declaration was/were the first Application(s) made in a Convention country in respect of the invention, the subject of the Application.

DECLARED at Vevey, Switzerland
this 18th day of March 1987.

(h) Personal Signature of Declarant (c) (no seal, witness or legalisation).


(Signature of Declarant)

To THE COMMISSIONER OF PATENTS.

SHELSTON WATERS
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(12) PATENT ABRIDGMENT (11) Document No. AU-B-70162/87
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 601967

(54) Title
COFFEE MAKER

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(71) Applicant(s)
SOCIETE DES PRODUITS NESTLE S.A.

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(74) Attorney or Agent
SHELSTON WATERS, 55 Clarence Street, SYDNEY NSW 2000

(57) Claim

1. A device for extracting material contained in a cartridge comprising:

a housing body having a substantially cylindrical hollow interior extending to and terminating at an open bottom of the housing body, the hollow interior being defined by the inside of the housing body and substantially conforming with an outer form of a cartridge containing material to be extracted, for accepting the cartridge for extraction and having an upper portion including an injection element having a point protruding into the hollow interior of the housing body along a central longitudinal axis of the interior of the housing body for opening and penetrating the cartridge for extraction;

at least one hole in the injection element communicating with a bore through the upper portion of the housing body for receiving water and for providing water to the cartridge for extraction;

an upper part protruding from the upper portion of the housing body outside of the housing body;

a lower stop, beneath and displaced from the upper protruding part, on a lower portion of the housing body

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protruding from the outside of the housing body;

a movable ring circumscribing the housing body and the stop and having a lug protruding towards the outside of the housing body at a position above the stop capable of engaging with the stop, the lug being at a position on the ring such that when the lug and stop are engaged, the ring protrudes below the bottom of the housing body; and

a spring confined between the lug and the upper protruding part and the ring and the housing body for urging the lug into communication with the stop.

601967

COMMONWEALTH OF AUSTRALIA

FORM 10

PATENTS ACT 1952

C O M P L E T E S P E C I F I C A T I O N

FOR OFFICE USE:

Application Number: 70162/87
Lodged:

Class Int.Class

Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:

This document contains the
amendments made under
Section 49 and is correct for
printing.

Name of Applicant: SOCIETE DES PRODUITS NESTLE S.A.,

Address of Applicant: VEVEY
SWITZERLAND

Actual Inventor: ERIC FAVRE
PETR MASEK

Address for Service: SHELSTON WATERS, 55 Clarence Street, Sydney

Complete Specification for the Invention entitled:

"A DEVICE FOR THE EXTRACTION OF CARTRIDGES"

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

A device for the extraction of cartridges

The invention relates to a device for the extraction of cartridges intended for the preparation of a beverage in a cartridge holder for coffee machines, this device being designed to be fitted onto the water outlet of the machine.

To make good espresso coffee from the cartridges according to CH-PS 605 293, certain requirements have to be satisfied during the extraction of the cartridges. The requirements are in particular the following: the ground and roasted coffee contained in the cartridge has to be uniformly wetted. The cartridge then has to open and the extraction phase has to be as short and as effective as possible.

An object of the present invention is to fulfil the above requirements and to substantially overcome the disadvantages of the prior art.

Accordingly, one broad form the present invention consists in a device for extracting material contained in a cartridge comprising a housing body having a substantially cylindrical hollow interior extending to an terminating at an open bottom of the housing body, the hollow interior being defined by the inside of the housing body and substantially conforming with an outer form of a cartridge containing material to be extracted, for accepting the cartridge for extraction and having an upper portion including a injection element of the housing body along a central longitudinal axis of the interior of the housing body along a central longitudinal axis of the interior of the housing body for opening and penetrating the cartridge for extraction; at least one hole in the injection element communicating with a bore through the upper portion of the housing body for receiving water and for providing water to the cartridge for extraction; an upper part protruding from the upper portion of



the housing body outside of the housing body; a lower stop, beneath and displaced from the upper protruding part, on a lower portion of the housing body protruding from the outside of the housing body; a movable ring circumscribing the housing body and the stop and having a lug protruding towards the outside of the housing body at a position above the stop capable of engaging with the stop, the lug being at a position on the ring such that when the lug and stop are engaged, the ring protrudes below the bottom of the housing body; and a spring confined between the lug and the upper protruding part and the ring housing body for urging the lug into engagement with the stop.

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The injection element is designed directly to pierce the cartridge when it is introduced into the coffee machine, the water pump then delivering the quantity of water required for wetting to the injection element through the water heater.

The number of holes provided in the injection element is preferably between one and six, more especially two holes diametrically opposite one another. The axis of these holes forms an angle of from 70 to 80° with the axis of the cylinder. This arrangement is useful for allowing effective diffusion of the water throughout the mass of coffee in the cartridge-----

20



so as to obtain complete extraction and to avoid the formation of channels in the ground coffee. To open the cartridge, the injection element has to be pointed, the angle of the point preferably being between 20 and 40° in order not to damage the upper dome of the cartridge.

10 The holes of the injection element are well-defined in size. This is because they have to be sufficiently wide to allow uniform arrival of the water under a pressure of as high as 15 bars, but not too large so as to avoid any risk of back-flow of the grounds at the end of extraction. The holes are from 0.2 to 1 mm and preferably 0.6 or 0.8 mm in diameter. On the outside of the cylindrical body of the extraction device, there is a helical spring and the release ring of the cartridge is preferably made of a plastic material accepted in the food sector.

20 The extraction device according to the invention additionally comprises a cartridge holder having a cylindrical inner form with an annular edge co-operating with the lower part of the cylindrical body. To ensure that, while the coffee is being made, the froth does not collapse and the jet remains vertical, the cartridge holder is provided with a system for cutting off the jet and with an inlet opening for air.

The invention is described in more detail in the following with reference to the accompanying drawings, wherein:

Figure 1 is an axial section through the extraction device according to the invention.

30 Figure 2 is an identical section showing the extraction device in operation.

The extraction device (1) comprises an upper part (2) with a screwthread (4) and a seal (12) for screwing onto the water outlet of a coffee machine and a hollow cylindrical body (3). The water passes through the bore (5) into the injection element (6) comprising two holes (7). The body (3) has an inner form (8) and, on its outer part, comprises a helical spring (9) holding a ring (10) to release the cart-

1 ridges at the end of extraction. The ring (10) is limited
in its movement on the one hand by the annular part (11)
(spring (9) compressed) and on the other hand by the stop
(13) co-operating with an annular lug (14) of the ring (10)
5 (spring expanded). For extraction, the procedure is as
follows: a cartridge (16) is placed in the cartridge holder
(15), after which the cartridge holder is placed beneath
the extraction device (1) according to the invention so
that the injection element (6) pierces the cartridge. The
10 hot water arrives on the ground coffee (17) through the
holes (7) under a pressure of at least 8 bars. By virtue
of this high pressure, there is no need for a seal at the
level of the injection element (6), the water remaining
firmly in the cartridge. The annular edge (20) on the
15 cartridge holder co-operates with the lower end of the hollow
cylindrical body (3) in order firmly to hold the edge (21)
of the cartridge (16). This firm holding of the edge is
essential because, during extraction, the filter (18) of
the cartridge is subjected to pressures capable of reaching
20 90 kg. Without this firm holding, the filter would be
deformed or torn which would result in poor extraction of
the cartridge and hence in an unacceptable espresso coffee.
The cover (19) of the cartridge then splits open along its
weakening line and the beverage ready for consumption is
25 recovered through the passage (22). The coffee flows
cleanly into the cup by virtue of the jet cut-off (24) and
the air inlet opening (23). This device gives an aerated
and unctuous espresso beverage in which even the volatile
aromas are recovered for a total extraction time of the
30 order of twenty seconds.

At the end of the extraction process, the cartridge
holder (15) is released, the ring (10) pushing the cart-
ridge (16) under the effect of the spring (9) so that the
cartridge is deposited in the cartridge holder. The system
35 is then ready for another extraction.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A device for extracting material contained in a cartridge comprising:

10 a housing body having a substantially cylindrical hollow interior extending to and terminating at an open bottom of the housing body, the hollow interior being defined by the inside of the housing body and substantially conforming with an outer form of a cartridge containing material to be extracted, for accepting the cartridge for extraction and having an upper portion including a injection element having a point protruding into the hollow interior of the housing body along a central longitudinal axis of the interior of the housing body for opening and penetrating the cartridge for extraction;

at least one hole in the injection element communicating with a bore through the upper portion of the housing body for receiving water and for providing water to the cartridge for extraction;

20 an upper part protruding from the upper portion of the housing body outside of the housing body;

a lower stop, beneath and displaced from the upper protruding part, on a lower portion of the housing body protruding from the outside of the housing body;

a movable ring circumscribing the housing body and the stop and having a lug protruding towards the outside of the housing body at a position above the stop capable of engaging with the stop, the lug being at a position on the ring such that when the lug and stop are engaged, the ring protrudes below the bottom of the housing body; and

30 a spring confined between the lug and the upper protruding part and the ring and the housing body for urging the lug into communication with the stop.

2. A device according to claim 1 wherein the injection element has from between one and six holes.

3. A device according to claim 1 or 2 further comprising



a cartridge holder having a housing having an annular edge for holding a rim of a cartridge for positioning the cartridge within the hollow interior for extraction by means of the annular edge in cooperation with the movable ring, and for removing the cartridge from the hollow interior in cooperation with urging of the movable ring on the cartridge rim and having a passage for beverage extracted from the cartridge to flow through.

4. A device according to claim 3 wherein the cartridge holder has an upper portion extending from about the edge of the holder about the ring.

5. A device according to claim 1 wherein the holes comprise bores having an angle of from 70° to 80° with respect to the axis of the hollow interior.

6. A device according to claim 1 or 5 wherein the pointed injection element has an inclined surface having an angle of from 20° to 40° .

7. A device according to claim 1 wherein the spring is a helical spring.

8. An extraction device substantially as herein described with reference to the accompanying drawings.

DATED this 8th day of JANUARY, 1990.

SOCIETE DES PRODUITS NESTLE S.A.

Attorney: PETER HEATHCOTE

Fellow Institute of Patent Attorneys of Australia
of SHELSTON WATERS



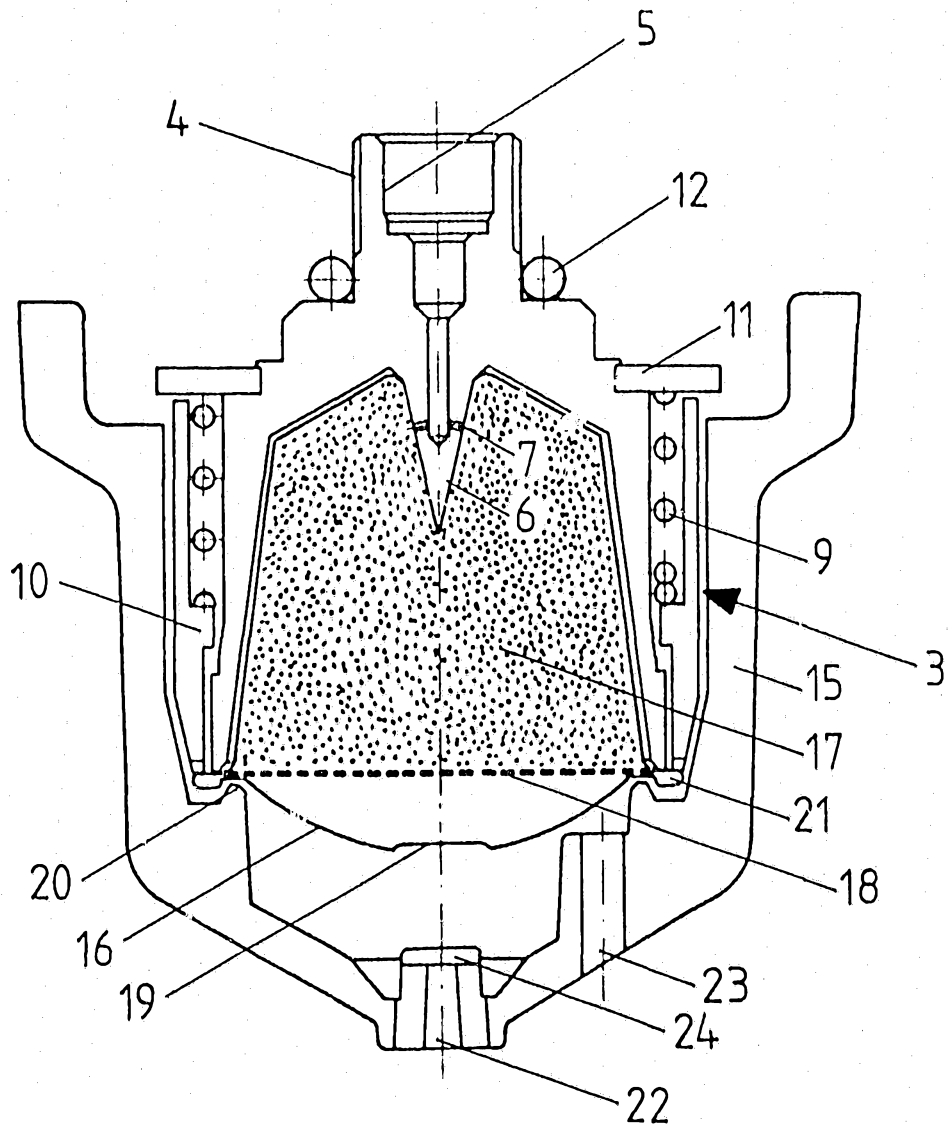


FIG. 2