

INTELLECTUAL PROPERTY

Anatomy of an Issued Patent

Editor's note: This is part four of a six part series on patent law. The next column will provide an introduction to patent enforcement.



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Below we introduce the various parts of a patent in an attempt to familiarize the reader with the structure of patents and thereby facilitate reading, navigating, understanding, and using patents.

Sections of a Patent

Reproduced in Figure 1 is the first page of U.S. Patent No. 7,018,667, titled "Meltable Form of Sucralose." In addition to the cover, a patent also contains drawings (where necessary), a specification, and at least one claim. A brief discussion of each of these parts of the patent, and their content and function, is provided below.

The Cover

By scanning the cover of a patent, such as the cover in Figure 1, one can find the patent number and issue date, its title, the names of the inventors and patent owner or assignee, information regarding the filing of the application, information regarding related references, and an abstract. These parts of the cover are described below.

Patent Number: The patent number is at the top right-hand corner of the cover. Here, the patent number is 7,018,667.

Patents are frequently referred to by the last three digits of the patent number. Thus, we refer to U.S. Patent No. 7,018,667 as the '667 patent.

Issue Date: The issue date is just below the patent number. The '667 patent issued on March 28, 2006. A patent owner's rights and the patent's presumption of validity begin on the issue date.

Title: The title of a patent appears in the upper left-hand column of the cover. The '667 patent is titled "Meltable Form of Sucralose." This provides some guidance regarding the subject matter of the patent. However, the boundaries of a patent are defined by its claims, not its title. Indeed, due to claim amendments and cancellations during prosecution (as explained in part three of this series), the title may not completely or accurately reflect the subject matter claimed. Therefore, any review of a patent should not stop with review of the title. For example, in addition

to claims to "meltable sucralose-containing sweetener[s]," the '667 patent also claims food products, processes for making food products, and processes for making a meltable sucralose-containing sweetener.

Inventors: Just beneath the title is a listing of the inventors, Carolyn M. Merkel, Ning Wang, and Jean Lee. As noted in part three of this series, a U.S. patent must be filed by the true inventors, not in the name of the ultimate owner of the invention.

Assignee: Just beneath the listing of inventors on the cover is identification of the assignee of the '667 patent, Tate & Lyle Public Limited Company. The following paragraphs explain the role of the assignee.

A patent is personal property and therefore can be sold, mortgaged, transferred, etc. Under U.S. patent laws, such transfers are made by using a written instrument known as an assignment. The person transferring the patent, often the inventor, is the assignor, while the recipient is the assignee. Employment contracts often require that an employee assign to the employer/company rights to any invention made during employment. Sometimes such requirements are implied.

Patents can be assigned multiple times. Such assignments are often filed with the United States Patent and Trademark Office (USPTO), which maintains an assignment database. (The database can be accessed at <http://assignments.uspto.gov/assignments/?db=pat>.) For example, the USPTO assignment database indicates that the '667 patent was assigned from the inventors to McNeil, PPC, and then from McNeil, PPC to Tate & Lyle Public Limited Company. The cover may not have the most current assignment information. Therefore, if assignment information is desired, one should check the assignment database and check with the USPTO assignment office.

Filing Date: Beneath the assignee information is filing date information. The cover of the '667 patent indicates that the application for the '667 patent was filed on November 13, 2001.

Prior Publication Data: U.S. patent applications are typically published about 18 months after they are filed. The publication date is provided beneath the filing date. The cover indicates that the application for the '667 patent was published on May 15, 2003.

Related U.S. Application Data: Below the filing date is the heading "Related U.S. Application Data." This part of the patent provides information regarding related applications, such as divisionals, continuations, and continuations-in-part (discussed in part three of this series). This section indicates that a provisional application was filed on November 17, 2000.


Estimating Patent Expiry From Filing Date & Related Application Information: Patents granted from applications filed on or after June 8, 1995, expire 20 years from the earliest application filing date. The filing date and related application data can be used to determine the earliest filing date. This determination can

be complex, and is beyond the scope of this series, because patent terms may be extended or disclaimed for various reasons and not all earlier filings count when determining patent term. For example, depending on the relationship between a provisional application and a nonprovisional application, the provisional application may or may not constitute the earliest filed application for purposes of calculating patent expiry. Note, however, that the cover indicates that the term of the '667 patent has been extended by zero days, meaning it has not been extended. Furthermore, failure to pay maintenance fees at 3.5, 7.5, and 11.5 years after issuance can render a patent unenforceable, even if the patent has not expired. The cover of a patent does not indicate whether a patent holder has kept current with maintenance fees, but such information can be obtained from the USPTO website at <https://ramps.uspto.gov/eram/patentMaintFees.do>.

U.S. Cl.: The USPTO classifies patents into classes and subclasses based on subject matter. All issued patents are classified according to this system. The class is identified by the heading U.S. Cl., found beneath the related U.S. application data. The cover of the '667 patent indicates that the USPTO placed the '667 patent in the following class/subclasses:

- 426/548: Food/noncarbohydrate sweetener or composition containing the same;
- 426/471: Food/of liquid or liquefied material, e.g., spray drying, etc.; and
- 426/660: Food/confection.

Field Of Classification Search: When an examiner receives a new patent application, a search is conducted in the relevant classes and subclasses to assess novelty and obviousness. One can search the USPTO patents database by class and subclass to



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(12) **United States Patent**
Merkel et al.

(10) **Patent No.:** **US 7,018,667 B2**
(45) **Date of Patent:** **Mar. 28, 2006**

(54) **MELTABLE FORM OF SUCRALOSE**

(75) Inventors: **Carolyn M. Merkel**, North Haledon, NJ (US); **Ning Wang**, Plainsboro, NJ (US); **Jean Lee**, Bridgewater, NJ (US)

(73) Assignee: **Tate & Lyle Public Limited Company**, London (GB)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/011,120**

(22) Filed: **Nov. 13, 2001**

(65) **Prior Publication Data**
US 2003/0091714 A1 May 15, 2003

Related U.S. Application Data

(60) Provisional application No. 60/249,616, filed on Nov. 17, 2000.

(51) **Int. Cl.**
A23L 1/236 (2006.01)

(52) **U.S. Cl.** **426/548**; 426/471; 426/660

(58) **Field of Classification Search** 426/548, 426/89, 103, 237, 438, 471, 660
See application file for complete search history.

(56) **References Cited**

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Sardesai V M et al, "Natural and synthetic intense sweeteners", Journal of Nutritional Biochemistry, Butterworth Publishers, Stoneham, GB, vol. 2, No. 5, May 5, 1991, pp. 236-244 XP-000892854.

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Primary Examiner—Leslie Wong
(74) *Attorney, Agent, or Firm*—RatnerPrestia

(57) **ABSTRACT**

The present invention provides a meltable sucralose and acesulfame-k sweetener. This sweetener may be incorporated in a wide variety of reduced calorie food products such as cooked and hard candies, microwaveable food products, glazed food products, deep fried food products and as a substitute for sugar in applications that require melt sugar.

21 Claims, 2 Drawing Sheets

Fig. 1. The first page of patent No. 7,018,667, titled "Meltable Form of Sucralose."

uncover patents in a field of interest. An index of the USPTO classes and subclasses can be found at the USPTO website.

References Cited: The cover lists the U.S. patents, foreign patents, and other materials the examiner considered when assessing patentability. Such materials often provide a starting point for learning more about the subject matter of an invention or for an alleged infringer trying to attack the validity of a patent.

Abstract: The cover includes an abstract of the invention at the bottom of the right-hand column. The abstract provides an overview of the invention. Due to claim amendments and cancellations during prosecution, the abstract may not completely or accurately reflect the subject matter ultimately claimed. Thus, any review of a patent should not stop with review of the abstract.

Drawings

After the cover come drawings, if there are any. Drawings are required if necessary to understand the invention. Therefore, the USPTO may deem an application incomplete if drawings are absent. Drawings are typically explained in the specification (described below).

Specification

The specification is the text of the patent. It comes after the cover and drawings and before the claims. In essence, the specification is a user manual that should provide enough description and detail to enable persons skilled in the art to make and use the full scope of the claimed invention. It defines terms used in the claims and often provides examples of the invention. It is the specification that must satisfy the written description, enablement, and best mode requirements of patentability. Therefore, the specification must be drafted as broadly as necessary to support broad claims and with as much specificity as necessary to support narrow claims. Understanding the claims of a patent often requires careful review of the specification.

A specification typically has, in order, the following sections: background of the invention, summary of the invention, brief description of the figures, detailed description of the invention, and examples.

The background of the invention, as implied by the title, describes the general field of the invention, notes insufficiencies in existing technology, and explains generally how the invention solves such problems. The summary of the invention usually provides additional information about how the invention solves the problem addressed by the invention. The brief description of the drawings briefly explains what the drawings show. The detailed description of the invention typically explains the invention and how to make and use it. Finally, the examples demonstrate how the invention works. The examples may set forth the methods and results of previously conducted experiments or they may be prophetic, setting forth methods that could be used and indicating expected (but not actual) results. A proper specification should make clear if examples are prophetic.

Claims

The claims are found at the end of the patent and follow the statement “I Claim” or “What is claimed is.” The claims include “limitations” that define the boundaries of a patent owner’s right to exclude. Such limitations are the elements against which patentability is tested, and the elements that a product or process must contain to infringe. Thus, any review of a patent must include careful consideration of the claims. Below we provide information to assist in reading and understanding claims.

Claims are numbered. By statute, each claim must be written as a single sentence. As a consequence, claims often are less readable than typical English sentences. Claims have three parts:

Patent Components and Functions

- There are several sections to a patent: the cover, drawings (where needed), specification, and claims.
- The cover contains useful information as to patent term, related patents, inventorship, ownership, and information considered by the examiner when determining patentability.
- The specification provides background regarding the field of the invention and the problem that the invention solves.
- The specification must satisfy the written description, enablement, and best mode requirements of patentability.
- The claims define the legal boundaries of a patent’s scope.
- Construing patent claims requires looking at the language of the claims, the specification, and the prosecution history. This often requires the assistance of patent counsel.
- Claim construction must be performed before assessing infringement or validity.
- Companies often seek opinions of counsel before launching new products.

a preamble, a transition, and a body. For example, consider the following hypothetical claim in which the claim parts are denoted: A composition (preamble) consisting of (transitional phrase) ingredient A, ingredient B, and ingredient C (body).

Much has been written about claim drafting and how to determine the meaning of claims. Below we provide some basic information about these three claim parts.

The Preamble

A preamble is an introductory statement that names the thing that is claimed or defines the field of invention. Preambles can be long or short statements, but short is preferred. When reading patent claims, one must be aware that the preamble may or may not serve as a claim limitation. If a preamble serves as a claim limitation, it narrows the claim. In other words, it provides an additional requirement a product or process must have to infringe the claim.

The Transition

The transition comes between the preamble and the body. One of the following two transitional phrases, or a variation thereof, is used in most claims: (1) consisting of, as used in the hypothetical above; or (2) comprising. The transitional phrase used affects how a claim is construed.

Consisting Of: The term consisting of is referred to as a “closed” transitional phrase. This means that the claim covers products and process that include only the limitations that follow the transition. For example, in the hypothetical above, the claim covers only compositions that contain ingredients A, B, and C; compositions with only A, B, and C would infringe claim 1. The claim would not cover compositions that also contain ingredient D; a composition containing A, B, C, and D would not infringe claim 1.

Comprising: The term comprising is known as an “open” transitional phrase. This means that the claim covers products and processes that include each limitation that follows this phrase, but that infringing products can also include additional elements. For example, had the hypothetical above used “comprising” as the transitional phrase, the claim would cover compositions that contain ingredients A, B, and C, whether or not they also contain ingredient D; a composition containing A, B, C, and D would infringe the claim if it were written with “comprising” as the transitional phrase.

The Body

The body of the claim is everything that follows the transition phrase. The body contains the limitations of the claim. As noted previously, limitations are the elements against which patentability is tested and the elements that a product or process must contain to infringe. In claim 1, above, A, B, and C are limitations.

There are two primary claim types—*independent* and *dependent*. *Independent* claims stand on their own. *Dependent* claims relate back to or “*depend from*” a previous claim. A *dependent* claim is construed to contain each limitation of the claim from which it depends, as well as the additional limitations added in the dependent claim itself. Consider the following hypothetical claim set:

2. A composition comprising an emulsifier, a starch, and a protein.
3. The composition of claim 2 further comprising a flavor blend.
4. The composition of claim 3, wherein the flavor blend is an artificial flavor blend.

Claim 2 is an *independent* claim that has three limitations: an emulsifier, a starch, and a protein. Claim 3 is a *dependent* claim that depends from claim 2. Therefore, claim 3 contains all three limitations of claim 2 (an emulsifier, starch, and protein), as well as the additional limitation of a flavor blend (whether artificial or natural). Claim 4 depends from claim 3 (which depends from claim 2). Therefore, claim 4 contains the emulsifier, starch, and protein limitations of claim 2 and the flavor blend limitation of claim 3, with the additional limitation that the flavor blend must be an artificial blend.

Claim Construction

Claim construction is a very complicated process by which the claims are interpreted to understand the scope of their limitations (what is covered and excluded). It requires consideration of the language of the claims themselves, the specification, and the prosecution history of the patent. Claim construction begins with the language of the claim. Typically, the words and phrases in the claims are given their ordinary meaning as used and understood by scientists and engineers in that field. However, a patentee can be his or her own “*lexicographer*,” meaning that the patentee may use claim terms in a way that is markedly different from their ordinary meaning if the patentee’s definition is clearly set forth in the patent specification.

Even seemingly simple terms may lead to claim construction disputes if a patent is later asserted against a competitor’s prod-

uct. During litigation, resolution of disputes concerning the meaning of claim terms often requires a court hearing that can last hours or even days. For example, in one patent dispute, the parties fought about the meaning of the claim phrase “containing a mixture of lipid and solid ingredients,” and the meaning of the specific terms “*ingredients*,” “*containing*,” and “*mixture*” (1). Often, resolution of such claim construction issues is determinative of whether a patent is valid and/or infringed.

Legal Opinions

Understanding what a claim covers is crucial to assessing issues of infringement and validity. For example, if a business wants to determine if a proposed new product may infringe an existing patent, it must: 1) construe the claims, and 2) compare the construed claims to its new product. It is important to note that infringement is not determined by comparing a proposed product to the patent holder’s product. Infringement is based on what is claimed in the patent. Similarly, to assess the validity of a patent, one must: 1) construe the claims, and 2) consider the construed claims in view of the prior art and other patentability requirements to determine if the claimed invention meets the requirements of patentability. Federal courts strictly adhere to these two-step processes.

Due to the complexity of the claim construction process, a patent attorney is typically consulted. For example, companies often seek freedom to operate or noninfringement opinions from patent attorneys before launching a new product. Such opinions entail searching the patent landscape to identify patents of interest, analyzing the patents (claims, specification, and prosecution histories), construing the claims, and comparing the claims to the proposed product to assess the potential for infringement liability. If potentially troublesome patents are identified, the patent attorney may be asked to assess the validity and/or enforceability of the patent. The patent attorney may also be asked for advice regarding design around options, i.e., a way to achieve the same result without infringing any potentially problematic patent claims.

Reference

1. *Mars Inc. v. H.J. Heinz Co.*, 71 U.S.P.Q. 2d 1837 (Fed. Cir. 2004).

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