

Asymptote[®] REVIEW AR

2008, Vol. 1

An Entertaining Excursion into Intellectual Property

No. 1

A Tribute to Splendid Simplicity

By Henry Petroski

Many of the most common things that we encounter in everyday life are also among the most elegant solutions in fitting form to function. Thus the familiar paper clip has long been widely admired by architects and designers for being a graceful loop-within-a-loop spring that silently does its job. The sewing needle, with its sharp elongated point balanced by its soft oval eye is a classic example of yin and yang united in a manufactured product. But such things, being made of steel, are many times removed from the mineral ore with which they begin. These are not things easily made from scratch by a single person. Small things made of wood are more organic, closer to nature, and possible to be formed by an individual with little more than a sharp knife and a patient hand.

My vote for the simplest object of all goes to one that is made of a single material, has a single part, and is intended for a single purpose, from which it gets its name: the toothpick. This humble tool, being so familiar as to be generally unremarkable, can be made by an idle boy with a stick and a jack knife. Each example would bear the individuality of the whittler and the uniqueness of its circumstances. But in the latter part of the nineteenth century, toothpick making—like virtually everything else—began to be mechanized, producing a product

whose shape could be reliably replicated.

Anthropologists believe, based on the existence of nearly two-million-year-old hominid fossil teeth bearing distinct grooves, that picking the teeth represents the earliest use of a nonlithic tool and is mankind's oldest habit. The grooves may have resulted from the repeated and prolonged use of grass stalks containing hard silica particles. With the development of civilization, toothpicks began to be deliberately fabricated from other materials. In ancient times, metallic toothpicks were used and ostentatiously displayed by privileged classes and provided the principal means of caring for one's teeth. Into the twentieth century, a gold or silver toothpick kept in a case in one's pocket or purse was a constant companion of the fastidious.

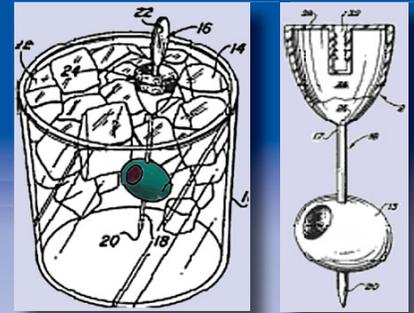
The more common wooden toothpick, perhaps consisting of a splinter of wood torn from a broken branch, was an ad-hoc alternative to the metallic kind. The production of wooden toothpicks as a cottage industry dates from the sixteenth century, when it was begun in the Mondego River valley in Portugal. There, a community of nuns that made and sold a sticky confection, provided wooden toothpicks to handle the sweets and to clean the teeth afterwards. The making of such toothpicks in the traditional way out of orangewood continued to be practiced in the region for centuries.

See 'Tribute to Toothpick Technology' on page 2

Sprinkled throughout our "Tribute to the Toothpick" this issue are a few thumbnail summaries from interesting "toothpick patents" our research revealed.

Readers can also find these and more in the new "Patently Amusing" section at www.adamspat.com.

US PATENT NOS. 5337766 (L), 5386840 (R)



FLOATABLE TOOTHPICK ASSEMBLY

Herein ... a toothpick assembly which includes a pointed lower end to piercingly connect to a piece of garnish, such as an olive or a cherry, and a buoyant float about the toothpick and adjacent to the upper end of the toothpick to float a piece of garnish in a beverage which can be retrieved by grasping the upper end of the toothpick.

Unique Application of Base Qualities Often Basis of Patentable Innovation

By W. Thad Adams, III

Adams Intellectual Property Law P.A. and *Asymptote Review* are pleased to have Dr. Henry Petroski as the guest author for this issue. Dr. Petroski is the Aleksandar S. Vesic Professor of Civil Engineering and a professor of history at Duke University. He is the author of many popular books on technology, engineering and their relationship to human culture. You will enjoy reading in this issue Dr. Petroski's insightful and entertaining history of the toothpick – yes, the toothpick – based on his recent book, *The Toothpick*, published by Alfred J. Knopf, 2007.

Dr. Petroski's book started me thinking about the nature of simple objects. We too often wrongly equate complexity with usefulness and take for granted the very simple but necessary things we use every day. A toothpick is typically just a slender piece of wood sized to fit between the teeth to remove trapped food particles. But what about its characteristics? It has hardness and softness, rigidity and flexibility, sharpness and bluntness, shape retention and malleability in relative degrees. Even though its name is "toothpick" the object itself has many uses—canapé holder, cake tester, masking liquid applicator and shim, just to name a few.

See 'Toothpick Patents' on page 5



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Asymptote Review is a Publication of

ADAMS Intellectual Property Law, P.A.

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Tribute to Toothpick Technology

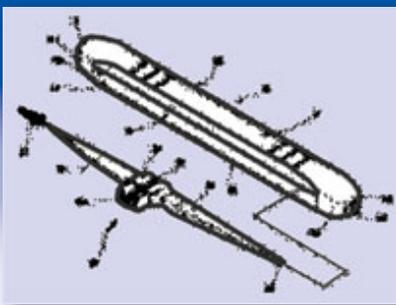
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Orangewood toothpicks were introduced into the Portuguese colony of Brazil, where the natives took up the making of them. The idea for a mass-produced wooden toothpick dates from the mid-nineteenth century, when the Bostonian Charles Forster was working in Pernambuco, Brazil, and became obsessed with the idea of producing a machine-made wooden toothpick in New England so efficiently that it could be exported to South America to compete with the local product. Forster was an entrepreneur with a dream, but he was no inventor. For a machine to make wooden toothpicks, he looked to the mechanized shoe-peg industry.

In the 1850s, the vast majority of shoes made in America had the soles attached to the uppers by means of wooden pegs. It was a very labor-intensive process to form the holes with an awl and then drive individual pegs by hand, and so many inventors wrestled with the problem of devising machines to speed up the process. One such inventor was Benjamin Franklin Sturtevant, who had worked as a cobbler and knew firsthand how tedious a job it was to peg shoes. Sturtevant patented pegging machines, but sold the rights to them to buy time to invent improved machines.

One of the things that needed improvement was the manner in which the wooden pegs were fed into the machines. Individual pegs were split from slats of wood as thick as the diameter of a peg, as wide as the peg's length, and shaped

US PATENT NO. 6973 932



TOOTHPICK & INTERDENTAL BRUSH COMBINATION

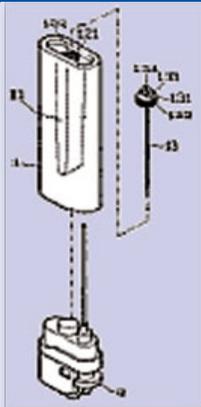
Herein ... a toothpick and interdental brush combination. The assembly comprises a projected trigger member, a first body member extended from the trigger member toward the first end, an interdental brush" integrally formed with the first body member at first end, a second body member extended from the trigger member toward the second end, and a toothpick integrally formed with the second body member at the second end.

In a storage state, both the toothpick and the interdental brush are concealed in the case.

US PATENT NO. 5931 659

MULTI-PURPOSE LIGHTER

Herein ... a multi-purpose lighter mainly including a case and an igniting means associated with the case to form a union body of the lighter. The case has an integrally formed separating wall which upward projects from a bottom center of the case and defines an elongated inner space with an expanded and internally threaded opening near the bottom of the case. A long pin having one pointed end and an expanded and externally threaded head opposite to the pointed end is screwed into the threaded opening of the separating wall for serving as a toothpick.



on one edge to form the point. Unfortunately, it was often the case that a peg split from such a "comb" was irregular because the grain of the wood was. This lack of uniformity often caused a peg to jam the machine or to cause damage to the leather of the shoe. Sturtevant began to focus on devising a better way of producing pegwood, as the unsplit supply of wood was termed.

Instead of splitting or sawing the pegwood from prepared timber, Sturtevant cut veneer from a rotating log. He patented his lathe attachment that could produce a continuous ribbon of uncracked veneer as much as a hundred feet long. When this ribbon was beveled on both sides of one edge, it could be fed into a shoe-pegging machine to provide a trouble-free supply of pointed pegs. Sturtevant sold a variety of patent rights to his lathe attachment but retained for himself the right to make the shoe-peg veneers. This proved to be the foundation of the fortune he eventually accumulated.

By beveling not one but both edges of a wider ribbon of veneer, a blank for making double-pointed toothpicks resulted. That blank could then be fed into a machine that chopped off a toothpick at a time. Sturtevant patented this process and the toothpick it produced, but he was not interesting in exploiting it himself. He was plenty busy and successful making shoe-peg blanks. The opportunity to mechanize the production of wooden toothpicks fell to Charles Forster, who through his wife-to-be Charlotte Bowman acquired the rights to Stur-

tevant's patent and some of his machinery.

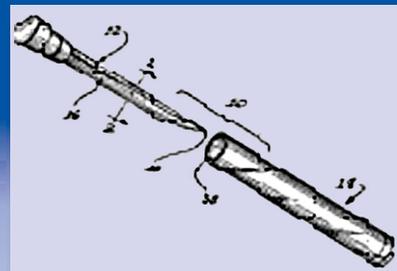
Forster had a difficult time getting the machines to work effectively. He tried different kinds of woods; some worked better than others, but none seemed to be ideal. One would dull the cutting blades very quickly, another would gum up the works. In the mid-1860s, Forster convinced Sturtevant to take back the machines and produce toothpicks himself, for which Forster would receive a royalty. Sturtevant did this for only a brief period of time, after which he made available to Forster the services of Charles Freeman, who would become the mechanical brains behind the Forster toothpick business.

By the late 1860s, the single most effective wood for producing toothpicks was found to be white birch, which grew in abundance in Maine. Since it was costly to ship large quantities of the wood to Boston, Forster moved his manufacturing operation to where the wood was. Birch was felled in winter, when the sap was not active, and carried by horse-drawn sled over snow-packed ground to the toothpick mill. It was soon possible to produce toothpicks by the millions daily, but to make a successful business of it more would have to be sold.

A lot of the Forster story is sketchy and contradictory, but a common thread that runs through it is that he was not averse to using deception to get his product into the hands of potential users. According to one version, when Forster was unsuccessful in placing boxes of his toothpicks in retail shops, he hired people to

Continued on next page

US PATENT NO. 4040 433



TOOTHPICK & CONTAINER ASSEMBLY

Herein is a reusable toothpick and container assembly. The assembly includes a toothpick having an elongated blade terminating at one end in a tip for removing debris from between the user's teeth, and having at the other end a cap by which the toothpick can be grasped.

The container is an elongated vial for holding mouthwash, into which the blade can be inserted and which can be sealed by the endcap. This provides for storage and cleansing of the toothpick between uses.

Tribute to Toothpick Technology

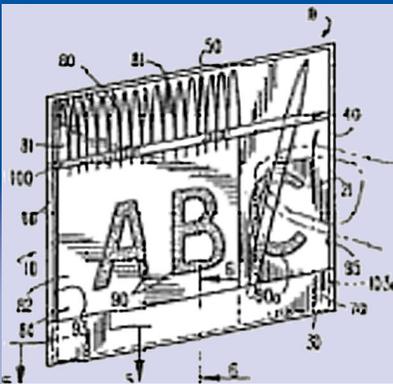
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visit those shops and ask for toothpicks. Shortly thereafter, Forster would revisit the shops and offer his wares. The proprietor would naturally want to stock what the supposed customers had been asking for. Then, the Forster shills would return to the store and buy boxes of toothpicks, which they gave back to Forster for recycling. Thus, he got his product placed.

According to another story, Forster wanted to get Boston restaurants to feel they had to supply toothpicks to their patrons. He is said to have hired Harvard men to dine at a restaurant and afterwards ask for toothpicks. When the manager confessed that he had none, the students raised a ruckus and let it be known that they expected restaurants to provide toothpicks. The story is repeated on the web site of the Union Oyster House, which makes the astounding claim that it was the place where "the toothpick was first used in the United States." In fact, handmade wooden toothpicks were being imported into and being used in restaurants in the United States well before Forster was reliably making them.

As effective a tool as the toothpick is for digging an unwanted seed or stringy piece of meat out from between the teeth, its use has been embedded in a history of tolerance and

US PATENT NO. 5664 674

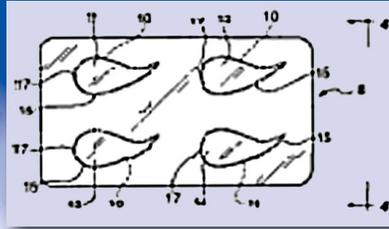


TOOTHPICK HOLDER & DISPENSER

Herein ... a rhombus-shaped toothpick holder for connected triangular toothpicks in a way that avoids toothpicks accidentally exiting the holder and poking someone is defined by area surface, four connected walls and a front bottom cover member that opens outwardly for insertion of the toothpicks and snaps closed.

Toothpicks are removed from a notch opening at the corner of two adjoining walls, where a broken off tooth pick can be slid out of the holder by the use of one hand. A safety bar is provided across the top surface.

US PATENT NO. 6213 132



FLAT TOOTHPICK AND KIT

The flat plastic toothpick comprising a thin sheet of plastic material having a somewhat tear-drop shape, including a generally oval-shaped base section for gripping the toothpick and a generally curved or hook-shaped end section for being inserted into the interstice between two adjacent teeth.

A kit is provided, comprising two or more plastic sheets having a plurality of the toothpicks perforated therein.

intolerance for the practice. By the end of the 1850s wooden toothpicks, albeit imported ones, were commonly found in hotels and restaurants in New York, if not yet in Boston. With the growing availability of the disposable wooden toothpick there came a rise in voices about its proper place in society. There was no doubt of the efficacy of the thing, but whether it was to be used in public or private became the subject of debate that continues to this day.

Much of the early commentary on toothpick use had to do with the practice of young men chewing on the things in public, especially when congregated on the steps in front of hotels. There was much speculation as to whether the toothpick chewers had actually eaten in a fine hotel's restaurant or were just trying to suggest that they had. The habit of carrying a toothpick in one's mouth became so widespread among dandies with high hats and walking sticks that groups of them came to be termed derisively "crutch and toothpick brigades." Young women who used toothpicks came in for even more ridicule and derision. In 1884, an editorial in the New York Times noted that women had recently taken up the habit and that "no lady at a watering place hotel seems to regard her toilet as complete unless she carries a toothpick between her lips, and it is said that some ladies have become so addicted to the habit that they cannot feel at ease on rising in the morning unless they consume two or three toothpicks before breakfast."

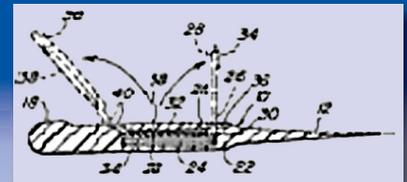
Whatever his role in promoting toothpick use, there can be little doubt about Charles Forster's contribution to establishing a viable manufacturing operation. With the exclusive rights to Sturtevant's patent, Forster enjoyed

a monopoly through the 1870s, which enabled him to get a running start on any future competition. And competition did come when patent protection expired. In the 1880s, there was a flurry of inventing and patenting activity to come up with more efficient manufacturing processes. Annual toothpick production by Forster in the mid-1870s was about 500 million. Over the next decade, yearly production from all firms amounted to about 5 billion. (Domestic wooden toothpick production would peak at around 75 billion just after World War II, then drop back to about 20 billion in the 1990s due in large part to foreign imports.)

Virtually all toothpicks made through the 1880s were flat, an artifact of their being cut like cookies from a strip of veneer. When Forster's patent protection ran out, Charles Freeman began working on a new process to make a round toothpick. After much back-and-forth with the patent office, he finally received a patent in 1887 for a machine for polishing and compressing toothpicks, and in 1891 for the very toothpick produced by that machine, thus initiating a new monopoly. The process for making a compressed toothpick was revolutionary: As a splint of wood cut from a ribbon of veneer was fed into Freeman's machine and progressed through its annular space, its ends were shaped into fine points. Prior to this, the points on toothpicks were formed by cutting through the wood fibers, leaving a point that was full of potential splinters. Forming the point by compression was less likely

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US PATENT NO. 4546 782



COMBINATION TOOTHPICK, GUM MASSAGER & DENTAL FLOSS HOIDER

A combination toothpick, gum massager and dental floss holder which contains a toothpick, two teeth cleaning surfaces, a gum massaging surface with dispenser and cutting blade for dental floss — all in one compact package.

The dental floss may be stored out of sight either loose or on a spool. A top cover protects the loose end of the floss and provides a surface on which advertising may be imprinted. The top cover may contain a bezel with clear lens or may be made of a translucent or opaque material.

Tribute to Toothpick Technology

Continued from previous page

to produce splinters. The toothpicks so made were marketed by Forster under the brand name Worlds Fair. As shown in the minimalist patent drawing, the overall shape of the toothpick was extremely graceful, with the round shaft tapering imperceptibly into the pointed ends. (This is in contrast to round double-pointed toothpicks made in now: In these, there is a sharp distinction between shaft and points, with the latter looking like they were formed by a small pencil sharpener.)

As simple and “perfected” an object as the wooden toothpick may appear to be, throughout its recent history manufacturers and inventors have looked for ways to make it faster and also more economically, often through the creative use of byproducts. The traditional processes have always involved a good deal of waste wood, but this has typically been burned to produce heat and power for the plants. A dynamo was installed in a Forster toothpick mill in Dixfield, Maine, as early as the 1890s, and the excess electricity produced was used to light a nearby bridge. Years later, another Forster plant—at Strong, the “toothpick capital of the world”—used waste wood to produce steam and electricity, with the excess of the latter being sold to the New England grid.

One way of simplifying the process of manufacturing toothpicks while at the same time reducing the waste produced was to leave the center shaft square and make only the ends round. Such “square/round tip” picks were introduced by the Forster firm in the mid-1980s and hailed as “ideal” because, like hexagonal pencils, they did not roll off the table, while at the same time they retained the desirable round tip. It may be argued that they were a functional improvement, but they are an aesthetic abomination, having none of the clean lines of the classic round toothpick.

Inventors have not limited their creativity to improving the wooden toothpick itself. One of the greatest shortcomings of the straight toothpick is the difficulty of using it to reach crevices on the tongue side of the teeth. One inventor solved this problem by devising a prosthesis-like rubber device that could be held on the tip of the tongue by a slight vacuum. With the tongue fitted with the pointed prosthesis, the wearer could more easily work on the inside crevices of the teeth. As an added advantage, this could be done with the mouth closed. Different inventors have focused on other perceived problems, such as not having a toothpick when one is needed. Several variations on the theme of incorporating a toothpick into a plastic or wooden eating utensil have been patented. In one, the handle of a plastic spoon is scored obliquely so that it can be broken after eating to form two sharp-pointed picks.

Just as virtually anything found or made can be beneficial or harmful, depending on how it is used, so toothpicks have been the cause of many injuries, some fatal. During the period from the late 1970s to the early 1980s, toothpick-related injuries, many involving children, were reported to have occurred in the U.S. at the rate of about eight thousand annually. Among the most dangerous things one can do with a toothpick is to swallow it. The relatively long and sharp object can easily get wedged sideways in the digestive tract and can puncture the intestines, leading to peritonitis. This happened in 1941 to the writer Sherwood Anderson, who was known to enjoy an olive in his martini. The tragedy might not have happened if the bartender had employed something similar to the floating toothpick resembling a miniature buoy patented by the Miami inventor Terry Lane.

Though his principal intent seems to have been to enable a garnish to be retrieved without the drinker’s fingers getting wet, the larger and more visible toothpick would certainly be less likely to be accidentally swallowed.

One autopsy revealed that an ingested toothpick had punctured the victim’s colon. The doctor reported finding the toothpick bent back upon itself in the mode of a “greenstick fracture.” The toothpick with one pointed end and one blunt was described as being Japanese. Such toothpicks have become fashionable, with the blunt end decorated with grooved bands. These seemingly non-functional flourishes are in fact meant to make it easy to break the end off a used toothpick to serve as a rest for the soiled point, thus at the same time signaling that the toothpick has been used and keeping its point from coming in contact with the table on which others are also eating. One Japanese toothpick user, accustomed to such etiquette, expressed surprise that American toothpicks have two points.

At one time 95 percent of all wooden toothpicks made in America were made in Maine, with the Forster firm making the large majority of them. Increasingly in the latter part of the twentieth century, the domestic wooden toothpick industry was threatened with foreign competition, especially from imports from the Far East. The last toothpick factory in Maine closed in 2003, and the “splendid splinters,” as they were once called, continued to be made domestically only in Minnesota, but that also soon ceased.

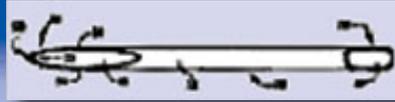
Over the decades in America, toothpicks used for their intended purpose of picking the teeth have fallen in and out of favor. It is the rare eating establishment that does not have a toothpick dispenser—or increasingly a jar or bowl of individually wrapped toothpicks—available at the checkout counter or the reception desk, though how prominently displayed tends to depend on the quality of the restaurant. Not all diners help themselves to a toothpick, of course, and these days it is not likely that crutch and toothpick brigades are encountered standing on a hotel’s steps or walking down the street of an American city with picks in their mouth. But the habit does persist, and every now and then I do see a contented man or woman chewing on a toothpick.

Elsewhere in the world toothpicks have continued to be used as they have been for generations. In Brazil, where Charles Forster got his inspiration for an American wooden toothpick industry, it is more common today to find a restaurant’s table set with salt and toothpick shakers than with salt and pepper ones. In Swedish restaurants, condiments on the table are customarily accompanied by a toothpick holder.

On a recent visit to that country with a dozen or so colleagues, I noticed at a group dinner that a large number of us made use of the toothpicks while talking over coffee. We each had our own style of using the pick, with some covering the mouth and others finishing by breaking the pick in two, to show that it had been used. This suggests to me that toothpick use is still widespread among Americans, but that it is generally done in private unless a clear indication is given that it is sanctioned to be done in public.

As small and simple a thing as the mass-produced wooden toothpick may be, its story is wide ranging and complex. It is a story infused with social and cultural origins, influences, and implications. The technical story is full of successes and failures, of false starts and elegant solutions, of mechanical genius and venal competition, of staggering numbers and human interest. In this regard, the toothpick is a paradigm for virtually any manufactured thing.

US PATENT NO. 5704 388



TUBULAR TOOTH PICK HAVING A FEATHERED TIP

Herein ... a tubular toothpick that can be used to remove food particles from between a user’s teeth, gums and periodontal pockets without damaging the soft tissue of the user’s gums is disclosed.

The toothpick is formed from synthetic resin materials and includes an elongated tubular body. One of the ends includes an oblique leading surface with a plurality of spaced-apart and independently movable finger portions that feather and soften the cleaning edge of the toothpick for permitting the toothpick to be inserted between a user’s teeth and gums without damaging the soft tissue of the user’s gums.

Toothpick Patents Collectively Exemplify Simplicity Trumping Complex Technology

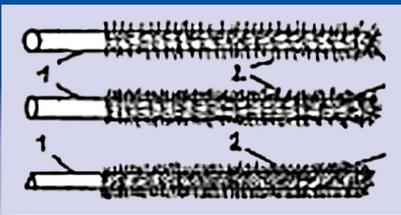
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I remember having a kitchen cabinet with a wallowed-out screw hole behind one of the hinges, causing the door to not close properly. After considering and rejecting the option of going out to the hardware store for a can of wood filler, most of which would have hardened over the years on a shelf in the garage, I got a dozen or so toothpicks out of a box in the pantry, coated them with white glue, formed them into a bundle, wedged them into the wallowed-out hole and cut them off flush with the surface. I reapplied the hinge, then centered the screw through the screw hole of the hinge into the bundle to about a third of the length of the screw threads and allowed the glue to harden. I used a drill with a screwdriver bit to drive the screw the rest of the way into the hole. The screw bit deeply into the glue-reinforced wood. It worked great, and the glued-together bits of wood are still there, not as toothpicks, but as “wallowed-out screw-hole filler-uppers.” It wasn’t what the wooden slivers were called, but their base qualities, that permitted them to serve admirably the desired purpose.

A number of years ago a small plane crashed in the Caribbean Sea. The occupants escaped from the plane only to be left floating in the water. They took an inventory of their meager possessions. One of the survivors looked in his wallet and retrieved a credit card with a bright, reflective surface. He used it to reflect sunlight towards the sound of an airplane. The light was seen by the pilot, and they were rescued. The base quality of the card—its shiny surface—became its important characteristic, while its usual status as a “credit card” with numbers specific to the owner were for those few hours utterly useless.

I couldn’t resist the temptation to search through the patent files and assemble my own

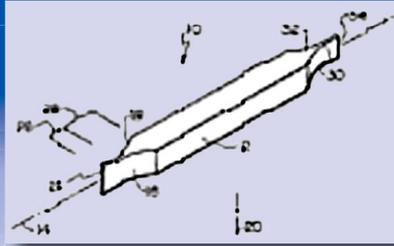
US PATENT NO. 4922 936



DENTAL CLEANER

Herein ... a dental cleaner in the nature of a toothpick has an elongated stable support which is covered with fine plastic flock particles of a small diameter in order to effectively clean small gaps between the teeth, between bridge anchors and in the sulcus region and to function as a micro-bottle cleaner for the spaces where plaque needs to be cleaned from the teeth.

US PATENT NO. 3978 872



TOOTHPICK

Herein ... disclosed a toothpick in which one end thereof is provided with a pair of hollow-ground surfaces terminating in a thin bladed end. The bladed end is sufficiently thin to pass between adjacent teeth in the mouth of the user.

collection of toothpick patents. There are many, and include patents for toothpicks themselves, machines for making toothpicks, toothpick holders and dispensers, and combinations of a toothpick with other object, such as a spoon, dental floss dispenser, toothbrush, beverage stirrer, cigarette lighter, and shower nozzle to name only a few. My personal favorite for the best toothpick patent title is “Implement to Facilitate Removing Bacterial Coating from the Interstitial Areas of Adjacent Teeth and Cleaning the Crevices Therebetween.” (U.S. Pat. No 4041962).

The most bizarre combination I ran across was for a smokeless tobacco can holder that included a threaded container for receiving and securing a can of smokeless tobacco, with a mirror and a toothpick connected to the underside of the container to assist a smokeless tobacco user in determining whether or not tobacco particles had become lodged between or were adhering to his (or her) teeth. The toothpick is “removably retained within a toothpick housing to assist the smokeless tobacco user in removing any detected tobacco particles from the teeth.” (U.S. Pat. No. 5752599.) Oh, brother!

A list of some relatively recent toothpick-related patents, with thumbnail illustrations and abstracts, can be found throughout this issue and on our website — www.adamspat.com (in our new Patently Amusing section).

As you read Dr. Petroski’s fascinating story, think about the base qualities of the objects around you. You may be surprised at the usefulness and adaptability of the very simple things that we take for granted. My sincere thanks to Dr. Petroski for his courtesy in allowing *Asymptote Review* to publish his article. Adjacent to this article is a list of his books. *To Engineer Is Human*, *Paperboy* and *The Pencil* are my personal favorites.

Books

By Henry Petroski

The Toothpick: Technology and Culture. New York: Alfred A. Knopf, 2007. ISBN 0-307-26636-2.

Success through Failure: The Paradox of Design. Princeton, N.J.: Princeton University Press, 2006. ISBN 0-691-12225-3.

Pushing the Limits: New Adventures in Engineering. New York: Alfred A. Knopf, 2004. ISBN 1-4000-4051-5. Paperback edition: Vintage Books, 2005. ISBN 1-4000-3294-6.

Small Things Considered: Why There Is No Perfect Design. New York: Alfred A. Knopf, 2003. ISBN 1-4000-4050-7. Paperback edition: Vintage Books, 2004. ISBN 1-4000-3293-8.

Paperboy: Confessions of a Future Engineer. New York: Alfred A. Knopf, 2002. ISBN 0-375-41353-7. Paperback edition: Vintage Books, 2003. ISBN 0-375-71898-2.

The Book on the Bookshelf. New York: Alfred A. Knopf, 1999. ISBN 0-375-40649-2. Paperback edition: Vintage Books, 2000. ISBN 0-375-70639-9.

Remaking the World: Adventures in Engineering. New York: Alfred A. Knopf, 1997. ISBN 0-375-40041-9. Paperback edition: Vintage Books, 1998. ISBN 0-375-70024-2.

Invention by Design: How Engineers Get from Thought to Thing. Cambridge, Mass.: Harvard University Press, 1996. ISBN 0-674-46367-6. Paperback edition: Harvard University Press, 1997. ISBN 0-674-46368-4.

Engineers of Dreams: Great Bridge Builders and the Spanning of America. New York: Alfred A. Knopf, 1995. ISBN 0-679-43939-0. Paperback edition: Vintage Books, 1996. ISBN 0-679-76021-0.

Design Paradigms: Case Histories of Error and Judgment in Engineering. New York: Cambridge University Press, 1994. ISBN 0-521-46108-1. Paperback edition: Cambridge University Press, 1994. ISBN 0-521-46649-0.

The Evolution of Useful Things. New York: Alfred A. Knopf, 1992. ISBN 0-679-41226-3. Paperback edition: Vintage Books, 1994. ISBN 0-679-74039-2.

The Pencil: A History of Design and Circumstance. New York: Alfred A. Knopf, 1990. ISBN 0-394-57422-2. Paperback edition: Alfred A. Knopf, 1992. ISBN 0-679-73415-5.

Beyond Engineering: Essays and Other Attempts to Figure without Equations. New York: St. Martin’s Press, 1986. ISBN 0-312-07785-8. Out of print.

To Engineer Is Human: The Role of Failure in Successful Design. New York: St. Martin’s Press, 1985. ISBN 0-312-80680-9. Paperback edition: Vintage Books, 1992. ISBN 0-679-73416-3.

Who We Are

The firm specializes solely in patent, trademark and copyright law, and the related areas of unfair competition and trade secret law. Our eight lawyers have expertise in a broad range of intellectual property issues.

Our practice within this specialty is diverse, including prosecution of patent and trademark applications in the United States Patent and Trademark Office; domestic and international patent, trademark and copyright prosecution and licensing. The firm also has extensive litigation experience and regularly litigates patent, trademark, copyright and related trade secret and unfair competition matters in Federal and State Courts and before government agencies.

The firm is United States patent counsel for foreign corporations, many of whom have facilities in the Charlotte area. We assist both foreign and domestic companies and individuals in planning and executing overall patent and trademark strategy.

The firm's clients are involved in diverse areas of science and business, including the design and manufacture of textile machinery, hosiery and other apparel, filtration equipment, medical equipment, orthopedic products, child safety products, power transmission equipment, jet engines, electronic controls, microprocessor wafer processing equipment, high-speed audio and video duplication equipment, flooring products and aircraft passenger seats.

The firm also represents advertising and public relations agencies, golf courses, computer programming specialists, a nationwide photographic film processor, trucking companies, stock car racing teams, and a national restaurant chain.

Overall, approximately 50% of the firm's practice involves international issues. For this reason, we have very close relations with the international community in Charlotte, and therefore have access to information and services which are not normally available to those without such a large concentration of business in the international intellectual property area.

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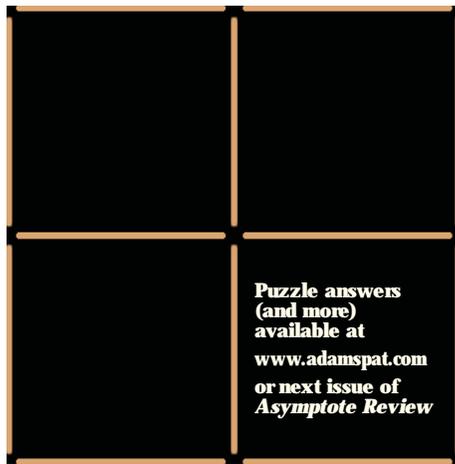
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TOOTHPICK PUZZLE

Part I: How many squares are outlined by toothpicks in the puzzle below?

Part II: Moving no more than two toothpicks, can the total squares be increased by two? If so, how?



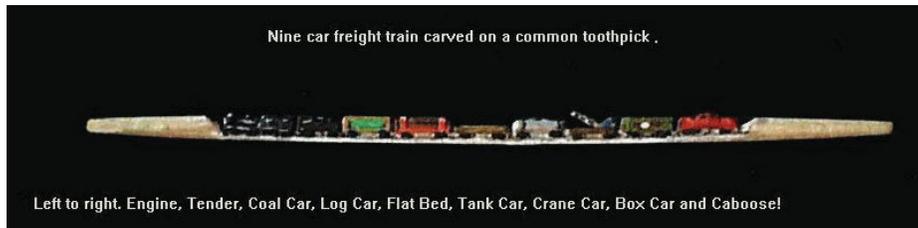
HINT: Some puzzles require thinking outside the box, while others don't.



QUEEN MARY: A WORK IN PROGRESS

25 feet long and already 370,000 toothpicks.

Estimated tally when completed:
1 million toothpicks & 30 gallons of glue.



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