

United States Patent

[11] 3,563,253

[72] Inventor **Rolf Barman**
Olav Kyrresgt. 45, Bergen, Norway
 [21] Appl. No. **736,316**
 [22] Filed **June 12, 1968**
 [45] Patented **Feb. 16, 1971**
 [32] Priority **June 19, 1967**
 [33] **Denmark**
 [31] **3,167/67**

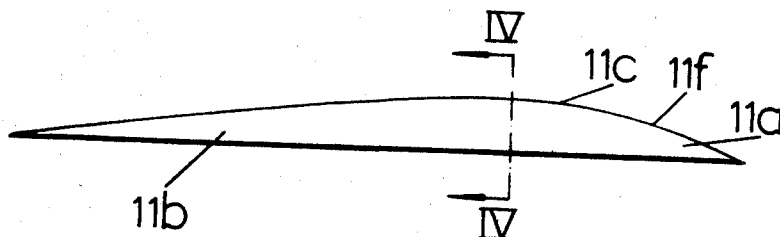
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Primary Examiner—Louis G. Mancene
Assistant Examiner—Gregory E. McNeill
Attorneys—Kenyon and Kenyon and Reilly, Carr & Chapin

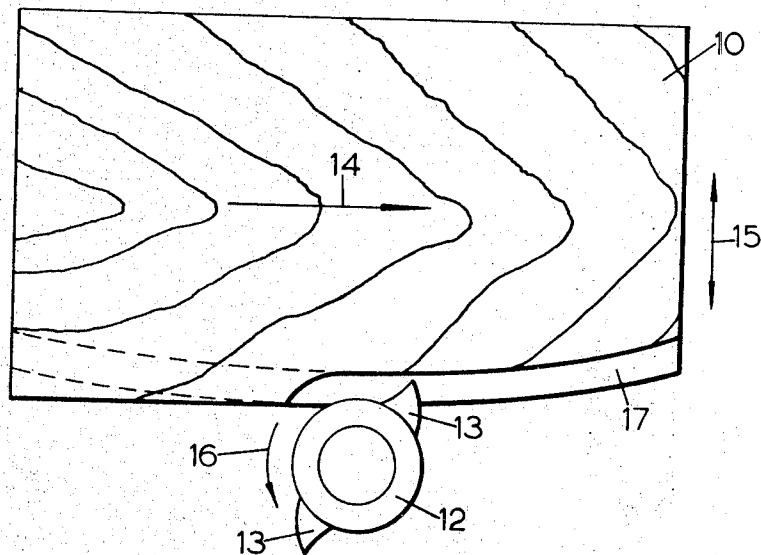
[54] **TOOTHPICKS**
9 Claims, 8 Drawing Figs.

[52] U.S. Cl. **132/89**
 [51] Int. Cl. **A61c 15/00**
 [50] Field of Search 132/89, 90,
 93, 72, 73, 75.6, 79.1; 206/29, 46 (Toothpick);
 144/320; 128/60

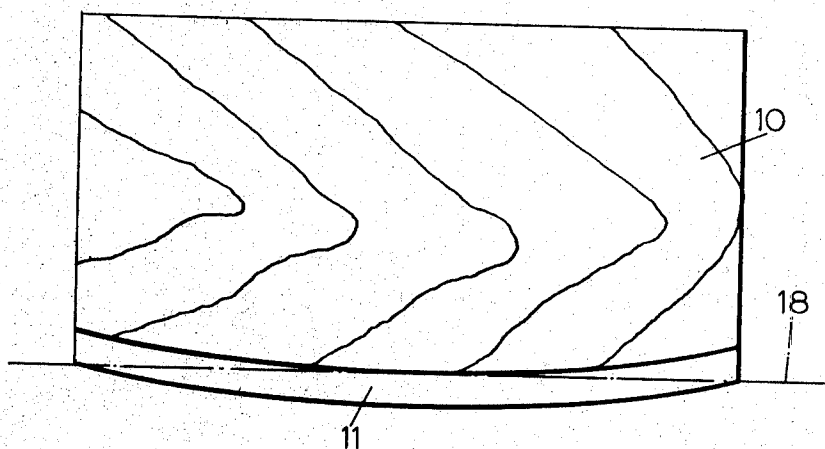
ABSTRACT: A toothpick of essentially triangular cross section and tapered at both ends, one or both of the apex edge and base face thereof having an outwardly curved contour. A process for manufacturing said toothpicks involving forming V-shaped grooves of the requisite shape in a raw material and separating the toothpicks therefrom.



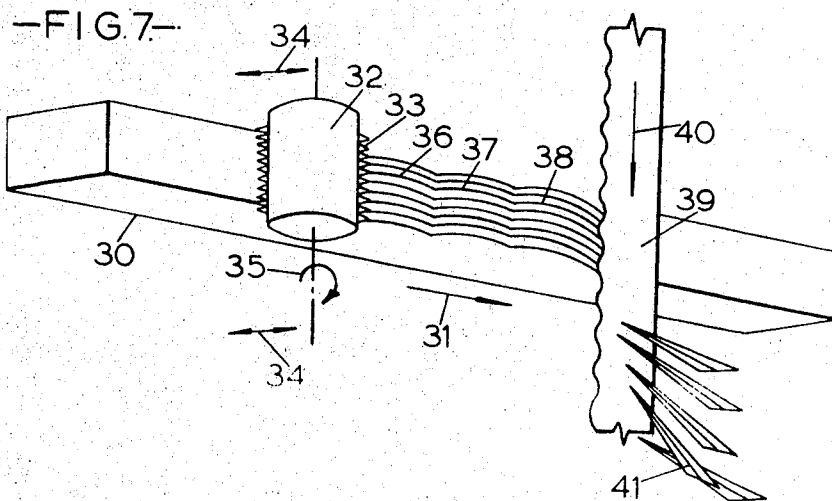
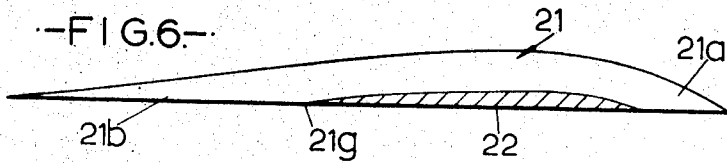
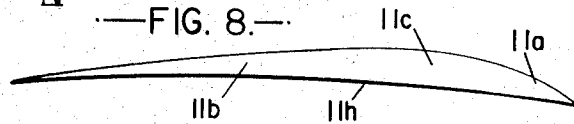
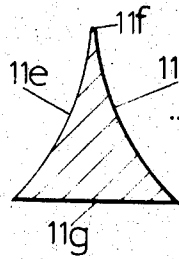
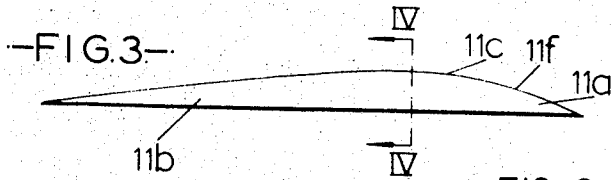
-FIG.1-



-FIG.2-



INVENTOR:
ROLF BARMAN
BY *Henry & Henry*
ATTORNEYS



INVENTOR:
ROLF BARMAN

BY

Kenyon Kenyon
ATTORNEYS

TOOTHPICKS

This invention relates to toothpicks.

A conventional type of toothpick made of wood and having a substantially triangular cross section is marketed in strip form with toothpicks arranged parallel to the sides of one another as a connected unit, so that they can be broken off therefrom singly as required. The individual toothpicks are wedge shaped and are manufactured in the form of a correspondingly wedge shaped board, a flat end surface of the latter and a flat bottom side both being partly broken through by V-shaped grooves, extending in a straight line, which are formed in the upper side in a suitable manner.

In practice it has been found that such known toothpicks are not fully satisfactory in all respects. For example there are difficulties in achieving great efficiency both for large and small spaces between teeth, that is to say in the intermediate spaces between back teeth and in the intermediate spaces between front teeth of one and the same user and besides for the differences associated with the various users. In order to obtain an effective cleaning of the teeth and gums and massage of the gums of different users, only a compromise solution has hitherto been available which resulted in a toothpick lacking the requisite strength and stability.

Accordingly the present invention provides a toothpick of essentially triangular cross section and tapered at both ends, one or both of the apex edge and base thereof having an outwardly curved contour.

Preferably, the toothpick tapers more abruptly at one end than the other and the two sides thereof connecting the base face with the apex edge are of outwardly concave form.

Also according to the invention a toothpick board comprises a plurality of toothpicks as described in the last two preceding paragraphs, said toothpicks being arranged in parallel side-by-side relationship and interconnected at positions approximately centrally of their lengths.

Toothpicks according to this invention also include those made by dividing a toothpick, as described in the aforementioned preceding paragraphs, at its center and transversely of its longitudinal axis.

It will be readily appreciated that the toothpicks can be made from a variety of materials, including plastics, although wood has proven to be especially convenient.

The invention also includes a method of manufacturing toothpicks of essentially triangular cross section and tapered at both ends which comprises the steps of:

- a. forming spaced, parallel V-shaped grooves of uniform depth in a raw material by means of relative movement between a first cutting means and said material; and
- b. separating the toothpicks from the raw material by applying, at the bottom of the grooves, a second cutting means,

said toothpicks being formed, in step (a), with apex edges of outwardly curved contour and, in step (b), with base faces which are substantially flat, or vice versa.

When fabricating a toothpick board, the grooves are cut to a minimum depth at positions substantially at the center of the eventual toothpicks in step (a) and, in step (b), the toothpicks are separated from the raw material by cutting just inside said positions so that they are only interconnected at said positions.

It is thus possible to produce toothpick boards or toothpicks by relatively few working operations, namely by means of two simple cutting operations. Toothpicks which are tapered at both ends are twice as advantageous as compared with conventional toothpicks which are only tapered at one end. Moreover, by utilizing a curved apex or upper edge and/or base or bottom face, the toothpicks can be readily constructed to suit individual requirements. In order that one and the same toothpick can be employed to good advantage for small and large intermediate tooth spaces, it will be appreciated that toothpicks having one end abruptly tapered while the other is tapered more thinly, are especially useful.

In order that the invention can be more readily understood, convenient embodiments thereof will now be described, by

way of example, with reference to the accompanying drawing, in which:

FIG. 1 is a schematic representation of a first cutting step in a process of manufacturing toothpicks in accordance with the invention;

FIG. 2 is a schematic representation similar to FIG. 1 showing the raw material prior to the beginning of the second cutting step;

FIG. 3 is a side view of a toothpick constructed in accordance with the invention;

FIG. 4 is a section on the line IV-IV of FIG. 3;

FIG. 5 is a plan of the toothpick of FIGS. 3 and 4;

FIG. 6 is a longitudinal section through a toothpick board showing the interconnecting portion between parallel toothpicks in section;

FIG. 7 is a schematic representation in perspective showing toothpicks manufactured in accordance with another embodiment of the invention; and

FIG. 8 is a side view of a toothpick having a curved base according to the invention.

In FIG. 1, there is shown a first cutting step as applied to a wood stock or raw material 10 in the manufacture of toothpicks 11 as illustrated in FIG. 2. The wood stock 10 is moved with a particular curved motion past a cutting tool 12 having teeth 13 which form substantially V-shaped grooves therein. The wood stock is moved from left to right in a compound movement which is illustrated by the straight arrows 14 and 15. The wood stock thus moves in a first movement tangentially relative to the cutting tool as illustrated by the arrow 14 and, at the same time, in another direction radially towards and away from the cutting tool as illustrated by the double arrow 15. On rotating the cutting tool executes, in a relative movement along the one side face of the wood stock a bent or curved line longitudinally of the toothpicks to be produced. During this relative movement there is produced in the wood stock a series of spaced apart, parallel V-shaped grooves 17 of uniform depth having a curved or bent contour.

It is apparent that the relative movement of the wood stock in relation to the cutting tool can be achieved in different ways. For example, the wood stock needs only be moved in the straight line shown by the arrow 14, while the cutting tool executes the movements, which are shown by the arrows 15 and 16. If desired, the wood stock can remain at rest while the cutting tool executes the necessary movements. In FIGS. 1 and 2, only a somewhat schematic manufacture is illustrated. For instance, control means and supporting means for the wood stock are not shown since there are available many different arrangements for the control and support of such relatively moveable parts.

In the embodiment illustrated in FIG. 1, the curved or bent contour of the toothpicks is brought about exclusively by means of the said cutting operation. An essential advantage resides in the fact that the toothpicks can be finally produced in a subsequent working operation by carrying out a simple separating or dividing operation in a suitable manner at a suitable level along the bottom side of the toothpicks. In FIG. 2, there is shown such a plane or flat dividing cut which can be produced by means of a band saw, band knife or the like (not shown). The dividing cut is illustrated by the dotted line 18 and is situated such that there are formed suitably tapered toothpick ends at each end of each toothpick, and at the same time, the cut is located such that the toothpicks are separated from one another during the said separating or dividing operation. It is evident, that the dividing cut is arranged at the "bottom" of the grooves 17 or more precisely just outside the bottom of the grooves at that position where the top edge of the toothpicks projects furthest outward from the wood stock.

In FIG. 2, there is indicated a toothpick 11 with substantially uniformly tapered ends. In the preferred embodiment, which is illustrated in FIGS. 3-5 there is shown a toothpick produced in a manner corresponding to that shown schematically in FIG. 1 and 2 but having a somewhat differing form. Initially, it must be pointed out that the toothpick is produced

with an abruptly bent end 11a as shown at the right in FIG. 3 and with a thinner outwardly extending end 11b which is shown at the left in FIG. 3, while there is a thinner curved transition 11c at the top edge of the toothpick. Correspondingly, it is evident from the FIG. 5 that the end 11a is more abruptly tapered than at the end 11b, so that there is obtained a relatively strong abruptly tapered end 11a at the one end of the toothpick and a thinner tapered, but somewhat more yielding, end 11b at the opposite end of the toothpick. The two different toothpick ends can be utilized for different purposes; for example, the one for large intermediate tooth spaces and the other for small intermediate tooth spaces.

In FIG. 4, side faces 11d and 11e of the toothpick are shown extending together towards the top edge 11f of the toothpick in an outwardly concave manner. The toothpick can thus adapt itself according to the shape of the teeth just at the gum. The toothpick 11 has a plane bottom side 11g.

In FIG. 6, there is illustrated a toothpick 21 having substantially the same shape as the toothpick in FIGS. 3-5 except that individual toothpicks, following the dividing operation from the wood stock, hang together with one another in a zone 22 roughly at their respective centers and in the form of a toothpick board from which the individual toothpicks can be broken off as required. The toothpicks 21 are formed with an abruptly curved and tapered end 21a and a thinner curved and tapered end 21b and with a plane bottom or base side 21d with outwardly concave side faces. In the construction according to FIG. 6, the dividing cut is located somewhat within the dividing plane 18 shown in FIG. 2 so that there is provided a connecting zone 22 of material between the parallel toothpicks arranged in side-by-side relationship.

In FIG. 7, there is shown an alternative form of manufacture in which an elongated toothpick material 30 is led in a straight line movement illustrated by the arrow 31, past a cutting tool 32 with a series of teeth 33. The cutting tool is moved towards and away from the toothpick raw material 30 as shown by the arrows 34, at the same time as it rotates as shown by the arrow 35. As illustrated at 36, 37 and 38, there are formed by means of the cutting tool successive rows of toothpick raw materials in a manner substantially corresponding to that described for a single row in connection with FIG. 1. A suitable distance after the cutting tool 32, a band knife 39 executes the said dividing operation corresponding to that which is illustrated in FIG. 2. The direction of movement of the band knife is shown by the arrow 40. At 41 it is shown, how the individual toothpicks fall downwards after the separating or dividing operation.

With the arrangement which is shown in the embodiment

according to FIG. 7, it is also possible to produce toothpicks in board form, when the dividing cut is placed suitably far into the wood stock. It is also possible to produce several such toothpick boards in succession as a combined unit in strip form. An advantage of such a mode of production is that a larger number of toothpick units can be handled in a simple manner in a subsequent working operation; for example, when submerging in an impregnation bath of the like for after treatment of the toothpicks.

Even if it is not shown in the illustrate embodiments, it is clear that the curved or bent contour of the toothpicks can be formed at the bottom side face 11h (FIG. 8) of the toothpick by means of a suitable dividing cut or, if desired, by means of an extra cutting operation. Such a curved or bent contour on the bottom side of the toothpick can be formed in addition to or in place of the bent or curved contour for the V-shaped grooves on the open or upper side of the toothpick.

I claim:

1. A toothpick of essentially triangular cross section throughout the length thereof and tapered at both ends, said toothpick having an apex edge, a base face and two sides connecting said face with said apex edge, at least one of said face and said apex edges forming an outwardly curved contour.

2. A toothpick according to claim 1, wherein the toothpick tapers more abruptly at one end than the other.

3. A toothpick according to claim 1, wherein the two sides thereof connecting the base face with the apex edge are of outwardly concave form.

4. A toothpick according to claim 2, wherein the two sides thereof connecting the base face with the apex edge are of outwardly concave form.

5. A toothpick accordingly to claim 1, which is made of wood.

6. A toothpick comprising a plurality of toothpicks according to claim 1, in which the toothpicks are arranged in parallel side-by-side relationship and are interconnected at positions approximately centrally of their lengths.

7. A toothpick of essentially triangular cross section throughout the length thereof and tapered at both ends, said toothpick having an apex possessing a longitudinally outwardly curved contour, a base face and two sides connecting said face with said apex.

8. A toothpick as set forth in claim 7, wherein said base face has a curved contour.

9. A toothpick as set forth in claim 7, wherein each said side has an outwardly concave form.

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