March 18, 1958 A. J. METZ 2,827,091

SLICER BLADES

Filed June 29, 1955

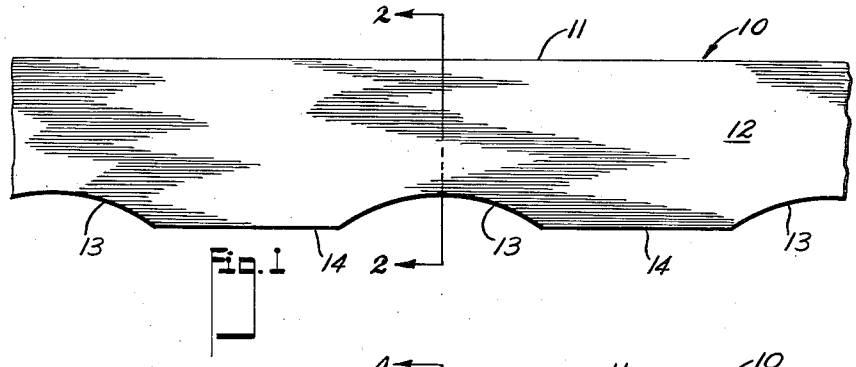


Fig. 1

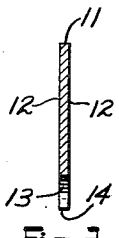


Fig. 2

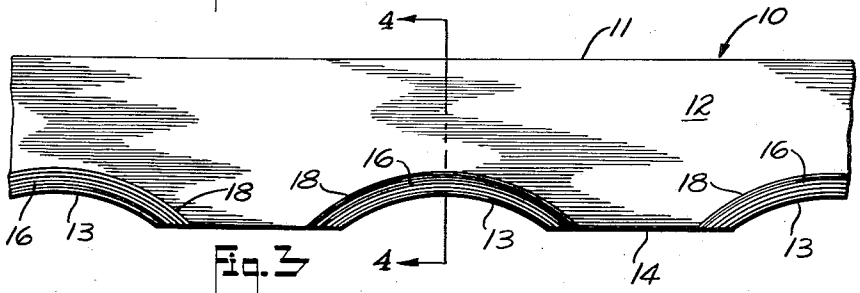


Fig. 3

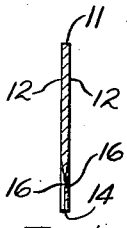


Fig. 4

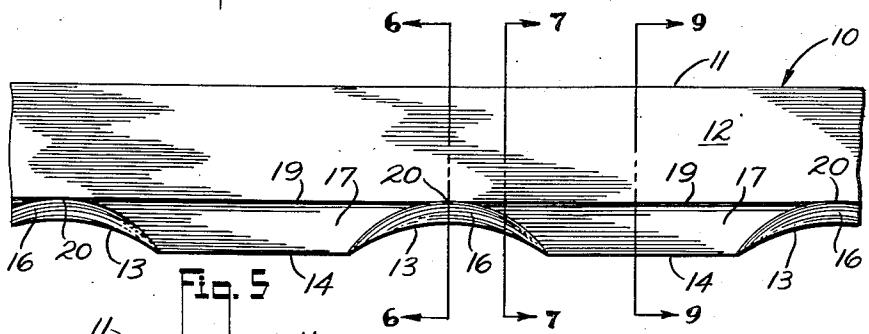


Fig. 5

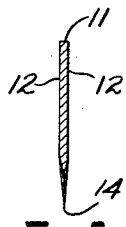


Fig. 6

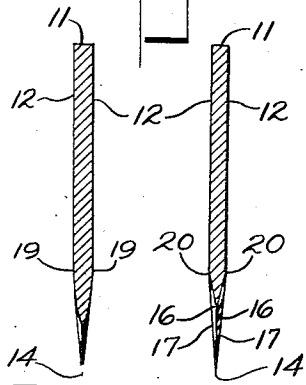


Fig. 7

Fig. 8

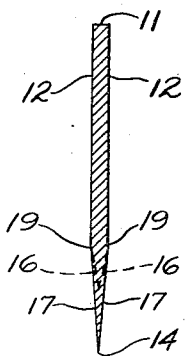


Fig. 9

INVENTOR.
ANTHONY J. METZ

BY Evans and Pearne

ATTORNEYS

United States Patent Office 2,827,091 Patented Mar. 18, 1958

2,827,091

SLICER BLADES

Anthony J. Metz, Davenport, Iowa, assignor to Bettendorf Bakery Equipment Company, Bettendorf, Iowa, a corporation of Iowa

Application June 29, 1955, Serial No. 513,864

3 Claims. (Cl. 146—88)

The present invention relates to blades for multiple blade slicing machines of the character used most commonly for slicing bread and other bakery goods, and also to methods for making such blades. The invention relates particularly to blades having a scalloped or serrated cutting edge. The invention is applicable both to continuous band blades and straight blades, as will more clearly appear hereinafter.

The most widely used blade form in recent years has had its cutting edge ground in the form of contiguous, concave scallops that meet end-to-end at sharp points, as disclosed in U. S. Patent No. 2,002,812 to Hansen, or in U. S. Patent No. 2,596,851, to Hansen. The present invention is directed to improvements in blades of the character referred to.

One of the objects of the invention is to provide a blade having excellent bread slicing characteristics imparted by the scalloped cutting edges of the prior art blades referred to, plus the slicing characteristics of a straight cutting edge, whereby a still more desirable cutting action is obtained than with either of those prior types of blades.

Another object of the invention is to reduce the cost of manufacturing and the cost of resharpening blades while retaining superior cutting action and reducing the wear on the blade guides on machines using continuous band blades.

The present invention, by which these objectives are accomplished, is characterized by: alternate straight edge portions and scallop-like valleys extending along the cutting edge of the blade, primary beveled lands converging from opposite sides of the blade and meeting at said straight edge portions, and secondary beveled lands converging from opposite sides of the blade and meeting at the profiles of said valleys.

The several objects, advantages, and characteristic features of the invention will be more fully understood from the following description of an illustrative embodiment of the invention and the preferred method of making the same, taken in conjunction with the accompanying drawing in which:

Figure 1 is an elevational view of a blade blank after the scallop-like valleys have been formed along one edge thereof;

Fig. 2 is a sectional view of the blade blank of Fig. 1, taken as indicated by the line 2—2 in Fig. 1;

Fig. 3 is an elevational view of the same blade blank after the secondary beveled lands have been ground thereon;

Fig. 4 is a sectional view of the partially fabricated blade of Fig. 3, taken as indicated by the line 4—4 in Fig. 3;

Fig. 5 is an elevational view of the finished blade;

Fig. 6 is a sectional view of the finished blade, taken as indicated by the line 6—6 in Fig. 5; and

Figs. 7, 8, and 9 are enlarged sectional views of the finished blade, Fig. 8 merely being an enlargement of Fig. 6, and the view of Figs. 7 and 9, respectively, being

taken as indicated by the lines 7—7 and 9—9 in Fig. 5.

Referring first to Figs. 1 and 2, the blade blank from which the blade is formed may be a thin steel ribbon 10 having a continuous, straight, back edge 11; opposite, parallel, side surfaces 12; and (prior to the first forming change shown in Figs. 1 and 2) another continuous, straight edge. The first forming operation may comprise punching or otherwise forming a series of spaced apart, scallop-like valleys 13 along the latter edge, the valleys being separated by straight edge portions 14, thus providing alternate scallop-like valleys and straight edge portions. Preferably, the valleys 13 and straight edge portions 14 are all of the same length, though unformity in this respect is not essential.

Referring now to Figs. 3 and 4, the next forming operation may comprise grinding opposite, secondary, beveled lands 16 of arcuate shape, initially extending uniformly along the full length of both sides of the profile of each scallop-like valley 13. These lands converge from the opposite side surfaces of the blank toward the profiles of the valleys, where they meet to form sharp knife edges over the entire lengths thereof.

The secondary lands 16 may be formed by bending the blade along an arc of a circle while bringing the blade in the zone of the bend into contact with a grinding wheel to grind one land 16, and advancing the blade and repeating the grinding operation to grind the next land 16. This may be done over the full length of one side of a blade and then over the full length of the other, as disclosed in the above mentioned Patent No. 2,002,812 to Hansen. Alternatively, a pair of lands 16 may be ground simultaneously, one on each side of the blade at points spaced along the length of the blade, by bending the blade along two arcs of reverse curvature and bringing two grinding wheels into contact with the blade at once, one on one side of the blade in the zone of one bend and one on the opposite side of the blade in the zone of the other bend, and advancing the blade and repeating the grinding operation to grind the next pair of lands.

Referring now to Figs. 5 to 9, the final forming operation may comprise grinding opposite, primary, beveled lands 17 along the full length of both sides of the blade, except for partial or complete interruptions thereof by the previously formed secondary lands 16. This grinding operation is a relatively simple one and various machines and precedures for performing the operation are well known in the art.

The angle that each secondary beveled land 16 makes with its adjacent side surface 12 at the base 18 of this land, and, therefore, the width of the land, is preferably, though not necessarily, uniform from end to end of each valley 13 when originally formed as shown in Figs. 3 and 4. Such angle and width are not critical and may be varied considerably as will be appreciated by those skilled in the art. Similarly, the angle that each primary beveled land 17 makes with its adjacent side surface 12 at the base 19 of this land is not critical and may be varied considerably. Thus, depending upon the particular land angles selected for the primary and secondary lands, their respective bases 19 and 18 may be substantially tangent at the points 20 (Fig. 5), or the bases 18 of the secondary lands may project toward the back edge 11 beyond the bases 19 of the primary lands 17, or may stop short of the bases 19 of the primary lands 17, as will be apparent. In any event, the primary lands 17 are at least partially interrupted at each valley 13 over the full width of the valley from one straight edge portion 14 to the next, and the grinding of the primary lands 17 reduces the width of each secondary land 16 from a maximum at or adjacent its center to virtually zero width at its extremities.

Blades constructed as shown and described have been

found to do a particularly excellent bread slicing job and have been specially designed for that purpose, though the invention is in no way limited to the use of the blades for cutting any particular bakery product or other kind of material.

The discovery that such blades will perform as well or better than the prior art blades having contiguous scallops or valleys along their cutting edges, meeting at points, has a great economic advantage in reducing the number of secondary lands **16** that must be ground and resharpened from time to time. In the particular embodiment of the invention shown and described herein, in which the lengths of the straight edge portions **14** are equal to the widths of the valleys **13** from one straight edge portion to the next, the number of secondary lands is reduced to half the number previously required. Since the grinding of the secondary lands **16** is a relatively expensive and slow operation, this advantage produces a substantial reduction in blade manufacturing costs and is realized in savings from reduced wear and tear on the grinding machines as well as from reduced production time, machine tie up time, and machine maintenance time for each blade produced.

In continuous band blade machines, elimination of the blade points between contiguous scallops of prior art blades of the above mentioned Hansen Patent No. 2,002,812 has also resulted in prolonging the life of the blade guides which hold the two adjacent runs of the blade parallel in the cutting zone. This is apparently due to elimination of the sharp points and/or the transverse ribs between contiguous scallops.

Having described my invention, I claim:

1. A cutting blade, comprising a thin, ribbon-like body having a back edge, an opposite cutting edge, and a pair of opposite, generally parallel side surfaces, said cutting edge being formed of alternate straight edge portions of substantial length parallel to said back edge and scallop-like valleys connecting one straight edge portion to the next, said blade having opposite, primary, beveled lands converging from said side surfaces toward and meeting at said straight edge portions, and having opposite, secondary, beveled lands converging from opposite sides of the blade toward and meeting at the profiles of said valleys,

all portions of said cutting edge lying in a common plane, the length of said straight edge portions amounting to at least a major part of the length of said profiles.

2. A cutting blade, comprising a thin, ribbon-like body having a back edge, an opposite cutting edge, and a pair of opposite, generally parallel side surfaces, said cutting edge being formed of alternate straight edge portions of substantial length parallel to said back edge and scallop-like valleys connecting one straight edge portion to the next, said blade having opposite, primary, beveled lands converging from said side surfaces toward and meeting at said straight edge portions over the entire lengths thereof, having opposite, secondary, beveled lands converging from opposite sides of the blade toward and meeting at the profiles of said valleys, all portions of said cutting edge lying in a common plane, the length of said straight edge portions amounting to at least a major part of the length of said profiles.

3. A cutting blade, comprising a thin, ribbon-like body having a back edge, an opposite cutting edge, and a pair of opposite, generally parallel side surfaces, said cutting edge being formed of alternate straight edge portions of substantial length parallel to said back edge and scallop-like valleys connecting one straight edge portion to the next, said blade having opposite, primary, beveled lands converging from said side surfaces toward and meeting at said straight edge portions over the entire lengths thereof, and having opposite, secondary, beveled lands converging from opposite sides of the blade toward and meeting at the profiles of said valleys over the entire lengths thereof, all portions of said cutting edge lying in a common plane, the length of said straight edge portions amounting to at least a major part of the length of said profiles.

References Cited in the file of this patent

UNITED STATES PATENTS

54,681	Bushman	May 15, 1866
2,671,267	Michalek	Mar. 9, 1954

FOREIGN PATENTS

592,234	Great Britain	Sept. 11, 1947