March 11, 1958 A. M. BAER 2,825,968

KNIFE BLADE

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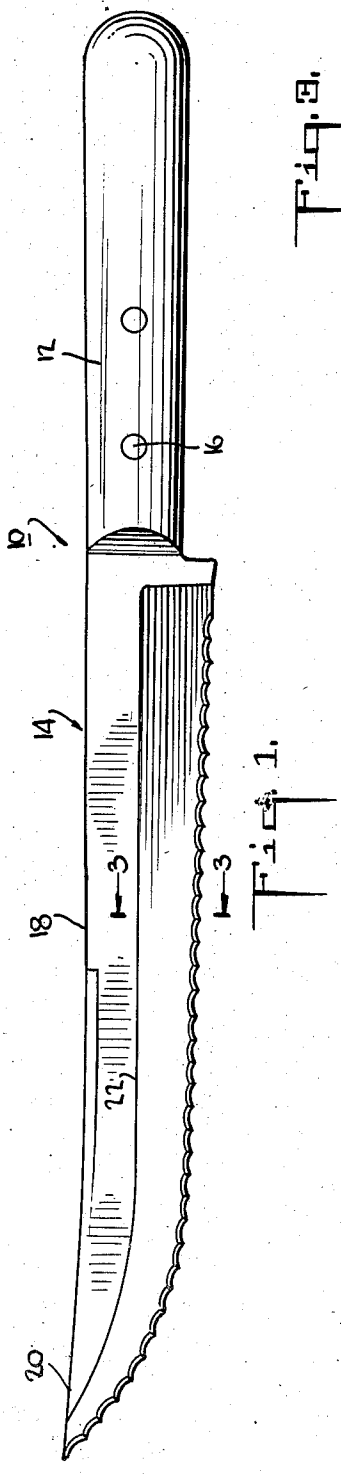

Fig. 1.

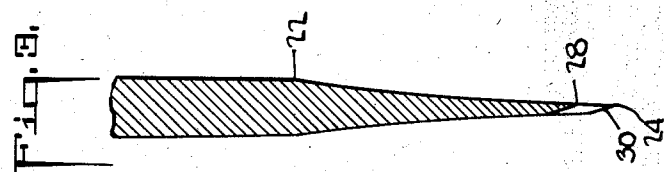

Fig. 3.

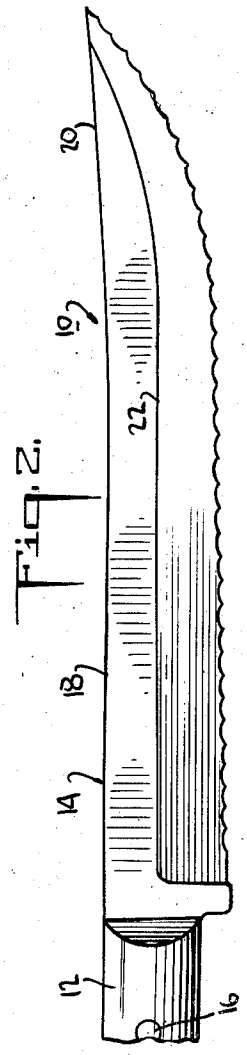

Fig. 2.

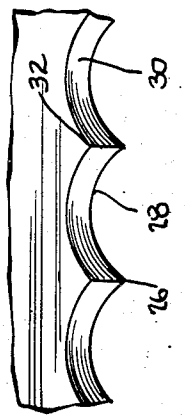

Fig. 4.

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KNIFE BLADE

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1 Claim. (Cl. 30—355)

This invention relates to a knife blade. More particularly, my invention pertains to a knife blade of the type which is employed in the slicing of food such, for example, as a steak knife, a vegetable knife or a carving knife.

For many years the field has experienced considerable difficulty in providing a slicing knife which had and could maintain a keen cutting edge. It was possible to so treat the blade and to pick steels of such constitution that the edge was hard and tough. Nevertheless, at the extreme hardness which it was desirable to impart to such blades, there was a tendency toward brittleness. If this tendency was counteracted by having the blade comparatively thick immediately in back of the cutting edge, it was not possible to secure an acute, and therefore extremely keen, edge. On the other hand, if the cutting blade was reduced in thickness immediately in back of the cutting edge as by employing a tapered, e. g., a hollow-ground, blade the cutting edge would chip, tear and bend under normal conditions of use. This was particularly, although not exclusively, true of blades which had been brought to a high Rockwell C, e. g., 56 to 61. These blades, even though tempered, had to be handled with care, especially when they were cutting foods resting on a hard surface.

It has been proposed to make the edge irregular as by the use of either tiny or gross serrations. However, until the present, the cutting edge provided on serrated blades has never been sufficiently keen and, indeed such blades do not perform a true shearing action but rather function by means of sawing, i. e., tearing, so that the resulting surface of the food is minutely or grossly scratched and is not as smooth as is desired.

It is the object of the present invention to provide a cutting blade which avoids all of the foregoing defects.

More particularly, it is an object of the present invention to provide a cutting blade of such character that, even if extremely hard, is so configured that it will not tend to chip, tear or bend if used in an ordinary manner.

It is another object of my invention to provide a blade of the character described which, although particularly thin immediately in back of the cutting edge, is still sufficiently sturdy to reinforce the cutting edge and thereby inhibit chipping, tearing or bending thereof so that the cutting edge has a long, useful life.

It is another object of my invention to provide a blade of the character described which, although serrated, does not sever by sawing or abrasion and therefore leaves a clean-cut surface.

It is another object of my invention to provide a serrated blade of the character described, each portion of the cutting edge of which shears rather than saws.

Other objects of my invention will be in part obvious and in part will be pointed out hereinafter.

My invention accordingly consists in features of construction, combinations of elements and arrangements of parts which will be exemplified in the knife hereinafter

described and of which the scope of application will be indicated in the appended claim.

In the accompanying drawings, in which is shown one of the various possible embodiments of my invention,

Fig. 1 is a plan view of a knife constructed in accordance with my invention;

Fig. 2 is a similar view of the opposite side of the knife;

Fig. 3 is an enlarged sectional view taken substantially along the line 3—3 of Fig. 1; and

Fig. 4 is a highly enlarged view in plan of a fragment of the blade in the vicinity of the cutting edge.

Referring now in detail to the drawings, the reference numeral **10** denotes a roast slicer embodying my invention. Said slicer includes the usual handle **12** in which there is inserted a tang (not shown) of a steel knife blade **14**, the tang being secured in a conventional fashion as by means of a pair of rivets **16**. The blade preferably is tempered and has a hardness of about 56 to 61 Rockwell C.

The blade is quite long, as is usual in the art, and its blunt upper edge **18** is curved slightly upwardly, as at **20**, near the tip. The lower longitudinal part of the blade is tapered on both faces, as by hollow-grinding, this consisting in the provision of an outwardly concave section having its upper edge **22** running longitudinally of the blade at approximately the longitudinal center line and its lower edge at the cutting edge **24** of the blade. The degree of concavity is comparatively slight, the purpose thereof being to have the opposite faces of the blade approximately parallel and very close to one another at the cutting edge whereby a minimum thickness is created at this region while the back of the knife from the blunt upper edge **18** to the edge **22** reinforces the hollow-ground region. The knife is hollow-ground on both sides as will be seen from inspection of Figs. 1–3. The hollow-grinding is performed with the aid of a conventional apparatus and in a conventional manner as, for example, by slowly traversing the blade longitudinally past and in engagement with a properly positioned grinding wheel.

After the blade is hollow-ground or otherwise tapered toward the cutting edge as by flat grinding or by stamping, rolling or molding, the thin cutting edge **24** thereof is scalloped, i. e., provided with a series of end-to-end outwardly concave segments. Although the specific dimensions of these segments are not of critical importance, I have obtained excellent results with segments that are approximately $\frac{3}{16}$ of an inch long and approximately $\frac{1}{64}$ of an inch deep. Each segment desirably is of circular configuration although this is not absolutely essential for satisfactory performance of my invention. It thus will be seen that the cutting edge consists of a linear set of spaced cusps **26** linked by short segmentally circular outwardly concave spans **28**.

Each of said spans is so treated on one face of the blade, as, for example, by grinding, so as to form an acutely inclined flank **30** whereby the lower edge of the blade is acutely tapered in a chisel like section to cutting sharpness. Preferably the flanks **30** of the cutting edge are smoothed after they have been formed to provide the sharpened cutting edge so that any burrs or steel shreds that may be present in said edge are removed. The flanks of adjacent spans meet at the ends of the spans to define ridges **32** extending from the cusps upwardly toward the edge **18**.

It now will be apparent that the cutting edge, instead of being straight, as is conventional in one type of blade, or instead of consisting, as is conventional in another type of blade, of a keen cutting edge interrupted by blunt serrations, has a scalloped cutting edge which is keen over the entire length of every individual scallop. This

means that when the blade is sliced through material each portion of each concave cutting span slices into rather than tears the material being cut, to leave a flat, clean, cut surface.

This type of cutting edge has been found to be far more effective than a straight cutting edge. The improvement is believed to be due in part to the increased effective length of cutting edge and in part to the different angles at which successive portions of the edge are presented to the material being cut. When a straight cutting blade is drawn through material the actual cutting is due to the downward movement of the blade, i. e., movement perpendicular to the cutting edge. The axial translation of the blade does not cause the cutting except insofar as the blade may be minutely serrated so as to saw through the material. On the other hand, when the blade consists of a scalloped edge in which each scallop is keen and the blade is drawn through material to be cut, while the blade is being translated axially, it is also cutting, the cutting taking place at angles perpendicular to the curved sections of the sharp concave spans.

I also have found that a blade of the foregoing construction has a longer useful life than a conventional straight cutting blade, this being due, it is believed, to the fact that cutting shifts from point to point along each of the concave cutting spans and further to the fact that the extremely thin sharp cusps are backed up and reinforced by the heavier section of the tapered, i. e., hollow-ground, blade immediately above it and by the heavier section of the hollow-ground blade which backs up the center of the concave cutting spans. In this fashion I am able largely to prevent the chipping, tearing and bending that is inherent in an ordinary straight, cutting blade, and particularly in a hard cutting blade.

It thus will be seen that I have provided a knife blade which achieves the various objects of my invention and

are well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein described or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

A tempered hard elongated steel knife blade having a thick blunt upper longitudinal edge and a sharp lower serrated edge, said knife being hollow ground on both faces thereof from a zone between said longitudinal edges and as thick as said upper edge to a thin zone immediately above said lower serrated edge, said serrated edge consisting of a set of spaced pointed cusps linked by short segmentally circular downwardly concave spans, each span being flat ground over its entire length from the thin zone to the sharp lower edge to form on one side of the knife only flanks of chisel-like section which are of uniform contour over the full length of each span and thereby sharpen the lower edge of the knife, the flank of each span intersecting the flanks of adjacent spans at the ends of each span to define ridges running upwardly from the cusps to the thin zone.

References Cited in the file of this patent

UNITED STATES PATENTS

1,254,563	Anderson	Jan. 22, 1918
2,002,812	Hansen	May 28, 1935
2,596,851	Hansen	May 13, 1952
2,636,267	Whitcomb	Apr. 28, 1953
2,671,267	Michalek	Mar. 9, 1954

FOREIGN PATENTS

592,234	Great Britain	Sept. 11, 1947