

# PATENT SPECIFICATION (11)

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## (54) IMPROVEMENTS IN OR RELATING TO VEGETABLE AND FRUIT-SLICING UTENSILS

(71) I, ALFRED BÖRNER, a German citizen, of 3 Pickliessemer Strasse, 5521 Dudeldorf, Federal Republic of Germany, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to domestic utensils for cutting potatoes, vegetables, fruit and the like into portions such as slices, of the kind which comprises a back plate which is solidly connected to two parallel rails, a removable front plate which is arranged between the rails and whose surface lies parallel to and below the surface of the back plate, and a blade arranged between the two plates, at least part of whose cutting edge lies in the same plane as the surface of the back plate. Hereinafter such utensils will be referred to as "of the kind described".

What is required from domestic utensils of the kind described is that they should allow slices of differing thicknesses to be cut. It is known to exchange the front plate for a different one, thus altering the distance perpendicular to the direction of operation between the front plate and the cutting edge of the blade, which distance determines the thickness of the slices which are cut. There is a disadvantage however in that there has to be a special front plate for each depth of cut required, which makes the utensil very expensive to produce and very cumbersome to use.

It is therefore an object of the invention to provide a domestic utensil of the kind hereinabove described in which different depths of cut can be set using only one removable front plate.

Accordingly the present invention consists in a domestic utensil of the kind described, wherein the removable front plate has on its underside bearer members each containing at least one step, said bearer members, when the front plate is inserted, being supported on supporting ledges which project inwardly

from the rails whereby the thickness of cut of the utensil may be altered by altering the points of engagement between said bearer members and said supporting ledges.

Advantageously, the edges of the removable front plate have spaced cut-outs adjacent the rails in which cut-outs locking ribs arranged on the rails engage.

The distance between the cut-outs in the removable front plate is advantageously the same as the axial length of the steps on the bearer members.

The bearer members are preferably connected together by webs which extend across the width of the removable front plate. The webs and bearer members are advantageously supported on transverse struts which are arranged between the rails and connect the rails together.

Advantageously, the transverse struts contain openings for the bearer members, and the webs and the transverse struts advantageously extend parallel to the leading edge of the blade.

Spaced dividing blades, which stand up perpendicularly to the main blade and parallel to the direction of operation, may be arranged in the removable front plate. Advantageously, a bearing plate containing apertures for the dividing blades may be placed on the removable front plate, in which case further spaced dividing blades are arranged between the apertures in this bearing plate perpendicularly to the blade and parallel to the direction of operation.

In order that a thin corrugated blade may be used in such a domestic utensil without the need for sharpening and so that this blade can be held firm and secure in the utensil, the back plate may have supporting ribs at its front edge which project into the space between the back and front plates: the rear part of the blade is solidly connected to the supporting ribs at the points where the crests of the corrugations are situated and to the back plate at the points where the troughs of the corrugations are situated.

Advantageously, the front ends of the

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supporting ribs taper in the direction of the blade.

The blade may have apertures in its crests, through which retainer portions of the supporting ribs engage, and guide ribs may be arranged among the supporting ribs, the lower edges of which extend obliquely downwards in the direction of operation.

- Advantageously, the crests of the blade have continuing from them tapering guide ribs which lie flush with the crests and merge into the back plate.

The metal cutting blade may be arranged obliquely to the direction of operation, and it may be closely connected to the plastics supporting ribs.

In order that the invention may be more clearly understood, reference will now be made to the accompanying drawings which show some embodiments thereof by way of example and in which:—

Fig. 1 is a plan view of a domestic utensil with the front plate inserted,

Fig. 2 is a plan view of the utensil with the front plate removed,

Fig. 3 is a sectional view of the utensil along the line III—III of Fig. 1,

Fig. 4 is a side-view of a front plate alone,

Fig. 5 is a view from below of a front plate,

Fig. 6 is a plan view of a front plate with dividing blades,

Fig. 7 is a front end view of the plate of Fig. 6,

Fig. 8 is a plan view of a fore-plate with dividing blades,

Fig. 9 is a front view of the fore-plate of Fig. 8,

Fig. 10 is a plan view of the plates of Figs. 6 and 8 placed on top of one another,

Fig. 11 is a front end view of the plates which are shown on top of one another in Fig. 10,

Fig. 12 is a plan view of a domestic utensil having a corrugated blade, with the front plate inserted,

Fig. 13 is a view from below of the utensil of Fig. 12,

Fig. 14 is a front end view of the utensil of Fig. 12, and

Fig. 15 is a sectional view of a guide rib taken on line IV—IV of Fig. 12.

Referring now to the drawings, the domestic utensil shown in Figs. 1, 2 and 3 has two parallel rails 1 and 2 to which a back plate 3 is solidly connected. Between the rails 1 and 2, which project beyond the back plate, is arranged a removable front plate 4, the surface of which lies parallel to but at a lower level than the surface of the back plate 3. Between the two plates 3 and 4 is arranged a metal blade 5, whose cutting edge lies in the same plane as the surface of the back plate 3.

On the rails 1 and 2 are arranged narrow ridges 6 while similar narrow ridges 7 are

arranged on the plates 3 and 4. The ridges 7 on the plates serve to reduce friction against foodstuff being cut when it is moved back and forth on the two plates. The ridges 6 on the rails 1 and 2 serve to reduce friction against a holder in which the foodstuff to be cut up is inserted and which is guided on the rails.

In Fig. 1 the front plate 4 has spaced cut-outs 8, 9 and 10 in its edges adjacent the rails 1 and 2. Locking ribs 11 arranged on the rails 1 and 2 are engaged in the cut-outs 8.

Fig. 2 shows supporting ledges 12 arranged to project inwardly from the rails 1 and 2. The rails 1 and 2 are connected together by transverse struts 13, 14, 15 and 16 with strut 15 containing apertures 17.

In Figs. 4 and 5, the removable front plate 4 has bearers 18, containing steps 19 and 20, on its underside. As can be seen in Fig. 5 some of the steps 20 on the bearers 18 are connected together by webs 21 which extend across the width of the front plate 4.

In the position shown in Fig. 1, the front plate 4 lies in the utensil with cut-outs 8 engaged with the locking ribs 11. As a result the higher steps 20 on the bearers 18, or the webs 21 connecting the higher steps 20, as the case may be, rest on the supporting ledges 12 on the rails 1 and 2 and on the transverse struts 13 to 16. As a result the distance between the front plate 4 and the blade 5 in a direction perpendicular to the direction of operation is very small, thus allowing thin slices to be cut with the utensil.

If the front plate is now inserted in the utensil in such a way that the cut-outs 9 engage with the locking ribs 11 on the rails 1 and 2, the lower steps 19 on the bearers 18 rest on the supporting ledges 12 or the transverse struts 13 to 16, as the case may be, and the said perpendicular distance between the front plate 4 and the blade 5 increases accordingly. Finally, if the removable front plate 4 is inserted in the utensil with its cut-outs 10 engaged with the locking ribs 11 on the rails 1 and 2, the plate lies with its underside on the supporting ledges 12 on the rails 1 and 2 and on the transverse struts 13 to 16 thus making the said perpendicular distance, between the front plate and the blade even greater.

In this way it is possible to set for different desired depths of cut using a single removable front plate, with the number of depths of cut which can be set depending on the number of steps on the bearers 18.

In Figs. 6 and 7, there is shown a front plate 4, which has a similar provision for cut adjustment as the embodiment previously described, also has spaced dividing blades 22 which stand up perpendicularly to blade 5 and parallel to the direction of operation. The plate 4 also contains cut-outs 8 which can be engaged with the locking ribs 11 when

the plate is inserted in the utensil. In this way the utensil can also be used to dice fruit by passing the fruit to be diced through the dividing blades 22 twice, in which case the fruit must be rotated after the first passage, and by then passing it through the blade 5.

Figs. 8 and 9 show a fore-plate 23 which has apertures 24 for the dividing blades 22 of the front plate 4 of Fig. 6. Between the apertures 24, further spaced dividing blades 25 are arranged perpendicularly to the blade 5 and parallel to the direction of operation.

If the fore-plate 23 is placed on top of the front plate 4 as shown in Figs. 10 and 11 and the pair is inserted in the utensil with cut-outs 8 engaged with the locking ribs 11, then the utensil can be used to cut the fruit to be diced into correspondingly smaller dice.

In the case of the embodiment shown in Figs. 12 to 15, a corrugated blade 26 is arranged obliquely in the slot extending from one rail to the other between the back plate 3 and the front plate 4. The cutting edge of this blade contains crests 28 and troughs 27 which extend parallel to one another and to the rails 1, 2, the bases of the troughs 27 lying in the same plane as the surface of the back plate 3.

At its front edge, the back plate 3 has supporting ribs 29 which project into the slot and which are solidly connected to the rear part of the blade at the points where the crests of the corrugations are situated. In its crests the blade 26 has apertures 30 with curved-over rims. Retainer portions 31 of supporting ribs 29 which hold the blade 26 in place engage through these apertures 30. Apertures may also be provided in the troughs of the blade 26 for retainer portions of the back plate 3 to engage through.

The front ends of the supporting ribs 29 are formed to taper in the direction of the blade. Among the supporting ribs 29 are arranged guide ribs 32 where undersides 33 extend obliquely downwards in the direction of operation. This makes it easier to guide the cut material downwards. Continuing from the crests 28 of blade 26 are guide ribs 34 which lie flush with the crests and which taper in the direction of operation and merge into the rear bearing plate.

The supporting ribs 29 provide secure and solid support for the thin blade 26, which preferably consists of 1/10 mm thick steel and which has no intrinsic rigidity in a direction transverse to the crests 28 and troughs 27. Also, during the operation of injection moulding the utensil, the plastics material makes its way through the apertures 30 and forms retainer portions 31, so that the blade 26 is closely connected to the plastics material of which the utensil is composed. Because of this it is possible to use unusually thin cutting blades, which do not have to be

sharpened even after frequent use. Also the cutting ability of the blade is considerably increased by its oblique position.

On the rails 1 and 2 are arranged locking ribs 35, which engage in cut-outs 36 in the front plate 4, and inwardly projecting supporting ledges 37 (Fig. 13). On its underside the front plate 4 has bearers 38.

With the front plate 4 in the position shown in Fig. 12, the bearers 38 rest on the supporting ledges 37 on the rails 1 and 2 so that there is only a short distance between the cutting blade 26 and the front plate 4 in a direction perpendicular to the direction of operation.

With the front plate 4 in the position shown in Fig. 13, the underside of the plate rests on the supporting ledges 37 on rails 1 and 2, with the result that the distance between the blade and the front plate in a direction perpendicular to the direction of operation increases accordingly.

Depending on the distance in a direction perpendicular to the direction of operation between the blade and the front plate, the utensil can be used to cut a fruit into strips or into corrugated slices with or without lattice-like apertures.

#### WHAT I CLAIM IS:—

1. A domestic utensil of the kind described, wherein the removable front plate has on its underside bearer members each containing at least one step, said bearer members, when the front plate is inserted, being supported on supporting ledges which project inwardly from the rails whereby the thickness of cut of the utensil may be altered by altering the points of engagement between said bearer members and said supporting ledges.

2. A domestic utensil as claimed in claim 1, wherein the removable front plate has, in its edges adjacent the rails, spaced cut-outs in which locking ribs arranged on the rails engage.

3. A domestic utensil as claimed in claim 2, wherein the distance between the cut-outs in the removable front plate is the same as the axial length of the steps on the bearer members.

4. A domestic utensil as claimed in claim 1, 2 or 3, wherein at least some of the bearer members are connected together by webs which extend across the width of the removable front plate.

5. A domestic utensil as claimed in claim 4, wherein the webs and the bearer members are supported on transverse struts which are arranged between the rails, and connect the rails together.

6. A domestic utensil as claimed in claim 5, wherein some of the transverse struts are apertured to receive the bearer members.

7. A domestic utensil as claimed in claim 5 or 6, wherein the webs and the transverse

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the plate is inserted in the utensil. In this way the utensil can also be used to dice fruit by passing the fruit to be diced through the dividing blades 22 twice, in which case the fruit must be rotated after the first passage, and by then passing it through the blade 5.

Figs. 8 and 9 show a fore-plate 23 which has apertures 24 for the dividing blades 22 of the front plate 4 of Fig. 6. Between the apertures 24, further spaced dividing blades 25 are arranged perpendicularly to the blade 5 and parallel to the direction of operation.

If the fore-plate 23 is placed on top of the front plate 4 as shown in Figs. 10 and 11 and the pair is inserted in the utensil with cut-outs 8 engaged with the locking ribs 11, then the utensil can be used to cut the fruit to be diced into correspondingly smaller dice.

In the case of the embodiment shown in Figs. 12 to 15, a corrugated blade 26 is arranged obliquely in the slot extending from one rail to the other between the back plate 3 and the front plate 4. The cutting edge of this blade contains crests 28 and troughs 27 which extend parallel to one another and to the rails 1, 2, the bases of the troughs 27 lying in the same plane as the surface of the back plate 3.

At its front edge, the back plate 3 has supporting ribs 29 which project into the slot and which are solidly connected to the rear part of the blade at the points where the crests of the corrugations are situated. In its crests the blade 26 has apertures 30 with curved-over rims. Retainer portions 31 of supporting ribs 29 which hold the blade 26 in place engage through these apertures 30. Apertures may also be provided in the troughs of the blade 26 for retainer portions of the back plate 3 to engage through.

The front ends of the supporting ribs 29 are formed to taper in the direction of the blade. Among the supporting ribs 29 are arranged guide ribs 32 where undersides 33 extend obliquely downwards in the direction of operation. This makes it easier to guide the cut material downwards. Continuing from the crests 28 of blade 26 are guide ribs 34 which lie flush with the crests and which taper in the direction of operation and merge into the rear bearing plate.

The supporting ribs 29 provide secure and solid support for the thin blade 26, which preferably consists of 1/10 mm thick steel and which has no intrinsic rigidity in a direction transverse to the crests 28 and troughs 27. Also, during the operation of injection moulding the utensil, the plastics material makes its way through the apertures 30 and forms retainer portions 31, so that the blade 26 is closely connected to the plastics material of which the utensil is composed. Because of this it is possible to use unusually thin cutting blades, which do not have to be

sharpened even after frequent use. Also the cutting ability of the blade is considerably increased by its oblique position.

On the rails 1 and 2 are arranged locking ribs 35, which engage in cut-outs 36 in the front plate 4, and inwardly projecting supporting ledges 37 (Fig. 13). On its underside the front plate 4 has bearers 38.

With the front plate 4 in the position shown in Fig. 12, the bearers 38 rest on the supporting ledges 37 on the rails 1 and 2 so that there is only a short distance between the cutting blade 26 and the front plate 4 in a direction perpendicular to the direction of operation.

With the front plate 4 in the position shown in Fig. 13, the underside of the plate rests on the supporting ledges 37 on rails 1 and 2, with the result that the distance between the blade and the front plate in a direction perpendicular to the direction of operation increases accordingly.

Depending on the distance in a direction perpendicular to the direction of operation between the blade and the front plate, the utensil can be used to cut a fruit into strips or into corrugated slices with or without lattice-like apertures.

#### WHAT I CLAIM IS:—

1. A domestic utensil of the kind described, wherein the removable front plate has on its underside bearer members each containing at least one step, said bearer members, when the front plate is inserted, being supported on supporting ledges which project inwardly from the rails whereby the thickness of cut of the utensil may be altered by altering the points of engagement between said bearer members and said supporting ledges.

2. A domestic utensil as claimed in claim 1, wherein the removable front plate has, in its edges adjacent the rails, spaced cut-outs in which locking ribs arranged on the rails engage.

3. A domestic utensil as claimed in claim 2, wherein the distance between the cut-outs in the removable front plate is the same as the axial length of the steps on the bearer members.

4. A domestic utensil as claimed in claim 1, 2 or 3, wherein at least some of the bearer members are connected together by webs which extend across the width of the removable front plate.

5. A domestic utensil as claimed in claim 4, wherein the webs and the bearer members are supported on transverse struts which are arranged between the rails, and connect the rails together.

6. A domestic utensil as claimed in claim 5, wherein some of the transverse struts are apertured to receive the bearer members.

7. A domestic utensil as claimed in claim 5 or 6, wherein the webs and the transverse

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struts extend parallel to the leading edge of the cutting blade.

8. A domestic utensil as claimed in any one of the preceding claims, wherein spaced dividing blades which stand up parallel to the direction of operation of the utensil and perpendicularly to the cutting blade are arranged in the removable front plate.

9. A domestic utensil as claimed in claim 8, wherein an apertured fore-plate for receiving the dividing blades is located on top of the removable front plate, and further spaced dividing blades are arranged in the fore-plate between the apertures perpendicularly to the cutting blade and parallel to the direction of operation of the utensil.

10. A domestic utensil as claimed in claim 1, wherein the back plate has at its front edge, supporting ribs which project into the space between the back plate and the removable front plate, and the cutting blade is corrugated, the crests and troughs of the corrugations extending parallel to the rails, the rear part of the blade being connected to the supporting ribs at the points where the crests are situated and to the back plate at the points where the troughs are situated.

11. A domestic utensil as claimed in claim 10, wherein the front ends of the supporting ribs are formed to taper in the direction of the cutting blade.

12. A domestic utensil as claimed in claim 10 or 11, wherein the cutting blade is apertured in its crests and troughs, through which apertures retainer portions of the supporting ribs and the back plate respectively engage.

13. A domestic utensil as claimed in claim 10, 11 or 12, wherein guide ribs, having lower edges which extend obliquely downwards in the direction of operation, are arranged among the supporting ribs.

14. A domestic utensil as claimed in claim 10, 11, 12 or 13, wherein the crests of the cutting blade have continuing from them guide ribs which lie flush with the crests and which taper in the direction of operation of the utensil and merge into the back plate.

15. A domestic utensil as claimed in any one of claims 10 to 14, wherein the cutting blade is arranged obliquely to the direction of operation of the utensil.

16. A method of manufacturing a domestic utensil as claimed in any one of the preceding claims, wherein the back plate is made from a suitable plastics material and is injection-moulded in a single operation onto the cutting blade, which has been previously inserted into a mould.

17. A domestic utensil of the kind described, substantially as hereinbefore described with reference to Figs. 1 to 5 or modified as shown in Figs. 6 or 7 of the accompanying drawings.

18. A domestic utensil of the kind described, substantially as hereinbefore described with reference to Figs. 8 to 15 of the accompanying drawings.

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