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(72) Inventors:
• **Maurice, Ingmar Christiaan**
1074 TV Amsterdam (NL)
• **Bouwknegt, Jan-Willem**
3181 HS Rozenburg (NL)

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(74) Representative: **Branfield, Henry Anthony**
The General Electric Company, p.l.c.
GEC Patent Department
Waterhouse Lane
Chelmsford, Essex CM1 2QX (GB)

(71) Applicant: **GEC AVERY LIMITED**
Warley, West Midlands B66 2LP (GB)

(54) **Slicer**

(57) A slicer comprises a frame having a driven slicing knife mounted thereon, and a table for supporting the product to be sliced. The table is movable parallel to the slicing knife. A pusher assembly is connected to the table in a manner pivotable about an axis perpendicular to the slicing knife and is movable along said axis

by means of a grip. The rig includes a pusher plate and a guard between the pusher plate and the grip. The pusher plate is mounted at a distance from the guard so as to ensure a safe distance between the guard and the slicing knife also when the pusher plate is approaching the slicing knife.

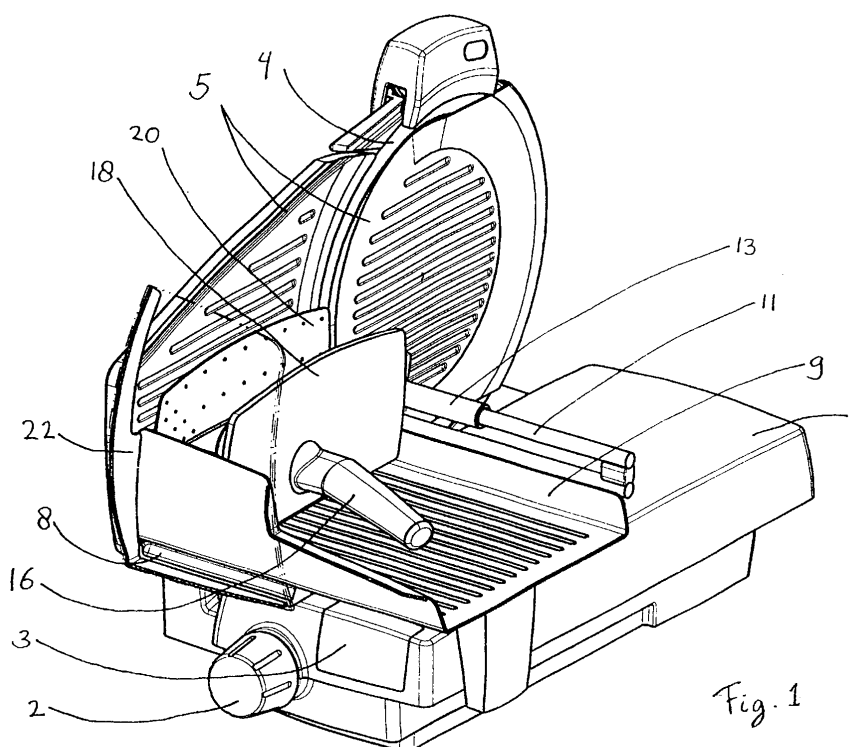


Fig. 1

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Description

[0001] The present invention relates to a slicer comprising a frame having a driven rotating slicing knife mounted thereon, a table for supporting the product to be sliced, the table being movable parallel to the slicing knife, and a pusher assembly connected to the table in a manner pivotable about an axis perpendicular to the slicing knife and movable along said axis by means of a grip, said pusher assembly including a pusher plate and a guard between the pusher plate and the grip.

[0002] Such slicer is known in the prior art. In order to comply with safety regulations, the prior art slicer has means to prevent the pusher assembly from approaching the slicing knife in an upwardly pivoted position. When the pusher plate is at a distance of 60 mm from the slicing knife, the pusher assembly abuts a stop and in order to be moved further towards the slicing knife, the pusher assembly must first be pivoted completely downwardly. In this position the pusher assembly can be moved up to the slicing knife. In this manner it should be made difficult or impossible for an operator to reach the slicing knife with his or her hand under the pusher assembly.

[0003] This manner of operating the slicer is not very convenient and it is therefore an object of the present invention to provide a slicer which allows both a safe and convenient operation.

[0004] For this purpose the slicer according to the invention is characterized in that the pusher plate is spaced from the guard.

[0005] By creating a space between the pusher plate and the guard, there is created a safety zone between the guard and the slicing knife even if the pusher plate is moved up to the slicing knife. Thus, a stop is now not necessary, which facilitates the operation of the machine without jeopardizing the safety thereof. If the distance between the pusher plate and the guard in the slicer according to the invention is approximately equal to the distance between the pusher plate and the slicing knife when the pusher assembly is stopped by the stop in the prior art slicer, then the slicer according to the invention is at least as safe as the prior art slicer. Depending on the safety regulations, the spacing between the pusher plate and the guard is for example at least 60 mm.

[0006] Preferably the pusher plate is an L-shaped plate which is removably attached to a mounting member of the grip.

[0007] Due to this feature, the pusher plate, which is the part of the pusher assembly which comes into contact with the product to be sliced, can easily be demounted in order to be cleaned. This makes the slicer according to the present invention also convenient for cleaning.

[0008] An advantageous embodiment of the present invention is that the pusher assembly is pivotally connected to the table by means of an arm which is pivotally mounted on a shaft between the grip and the pusher

plate.

[0009] In this way the spacing between the pusher plate and the guard is used for mounting the pivoting arm of the pusher assembly so that the spacing does not affect the compactness of the pusher assembly.

[0010] The invention will hereafter be further explained with reference to the drawings showing an embodiment of the invention by way of example.

[0011] Fig. 1 is a perspective view of the embodiment of the slicer according to the invention.

[0012] Fig. 2 is a perspective exploded view of the main parts of the table of the slicer according to fig. 1.

[0013] Fig. 3 is a perspective exploded view of the pusher assembly of the table of fig. 2.

Fig. 1 shows the complete slicer which includes a stationary housing or frame 1 adapted to be placed on a support. This frame 1 comprises external operating means such as a turning knob 2 for adjusting the slicing thickness and an operating panel 3 with switches and buttons. The housing or the frame 1 may also accommodate an electric motor or other drive member for driving the slicing knife 4. The slicing knife 4 is housed almost completely in removable guards 5 mounted on a bracket which also supports a rotary shaft of the slicing knife 4.

The slicer further comprises a slicing table 6 which is slidable back and forth with respect to the frame 1 in a direction parallel to the slicing knife 4. The sliding movement is guided by linear guides not shown. By means of the table 6 a product to be sliced, such as cheese, meat products or the like, is supported. By moving the product parallel to the slicing knife 4, while it is being pushed in a direction towards the guards 5, a slice will be cut off from the product. For pushing the product towards the slicing knife 4, the table 6 is provided with a pusher assembly 7.

[0014] Fig. 2 shows the structure of the table 6 and the pusher assembly 7. In this embodiment the slicing table 6 is constructed with two main parts: a lower table member 8 and an upper table member 9. The upper table member 9 is provided on its side facing away from the slicing knife 4 with pivoting and demounting means 10 a, b arranged to demount the upper table member 9 from the lower table member 8 for cleaning purposes. The upper table 9 is only removable after pivoting it upwardly around a horizontal shaft 10c mounted on the lower table member 8 which extends parallel to the slicing knife 4. Fig. 2 also shows a guide bar 11 extending horizontally and perpendicular to the slicing knife 4 and being mounted on the rear side of the lower table member 8. The guide bar 11 provides a linear guide for sliding the pusher assembly to and from the slicing knife and as a pivoting shaft for a pivoting arm 12 of the pusher assembly 7. The pivoting arm 12 is provided with a bearing sleeve 13 fitted around a guide bar 11. The other end of the pivoting arm 12 remote from the bearing sleeve 13 is equipped with a bearing sleeve 14 which is rotatable around a shaft 15 of the pusher assembly 7.

[0015] Fig. 3 shows further details of the pusher assembly 7 comprising as its main components, beside the pivoting arm 12 and the shaft 15, a grip 16 and mount 17 for the grip, a safety guard 18 and a mounting means 19 for the safety guard, a pusher plate 20 and a mounting member 21 for the pusher plate. The shaft 15, the grip 16 and its mount 17 and the mounting means 19 are all aligned with the shaft and are mounted to the shaft 15. The mounting means 19 for the guard 18 also includes means 23 for restricting the angle of rotation of the pivoting arm 12 with respect to the shaft 15.

[0016] The pusher plate 20 has e.g. pins or the like on its lower side and its side facing the slicing knife 4 in order to engage a product to be sliced in order to firmly hold it and move it with respect to the slicing knife 4. The transverse section of the pusher plate 20 is L-shaped. It is removably mounted to the mounting member 21 of the pusher assembly 7 by means of a screw knob 24. The guard 18 is preferably a transparent plastic plate extending the whole length across the slicing table 6 and being fixed with respect to the grip 16.

[0017] As is more clearly shown in fig. 1 the vertical part of the pusher plate 20 and the vertical guard 18 are spaced from each other by the bearing sleeve 14 and hence kept apart at a distance which should be at least equal to a safety distance determined by safety regulations. The safety distance may for example be appr. 60 mm. This means that the guard 18 has a minimum distance from the slicing knife 4 of at least 60 mm in order to keep a hand of the operator at the safe distance from the slicing knife 4.

[0018] The grip 16 of the pusher assembly 7 has a first portion 16' in line with the shaft 15 and a second portion 16'' which is angled with respect to the first portion 16' in a downward direction and also in a direction towards the operator. Such grip facilitates the manipulation of the pusher assembly, i.e. a pivoting movement of the arm 12 with respect to the guide bar 11, a pivoting movement of the pusher plate 20 with respect to the arm 12 and a sliding movement of the pusher plate 22 parallel to the slicing knife 4.

[0019] With reference to fig. 1 there is shown a transparent front guard 22 attached to the front side of the lower table member 8 protecting the slicing knife 4 from the front and preventing an operator having access to the slicing knife 4 from the front.

[0020] When the slicer should be cleaned, the parts in contact with the product to be sliced should be demounted i.e. the pusher plate 20 and the upper table member 9, and for this purpose the pusher plate 20 is demounted from the pusher assembly 7 and the upper table member 9 is demounted from the lower table member 8 after the pusher assembly 7 is pivoted to the back to allow a pivoting movement of the upper table member 9. Both guards 18 and 22 are mounted such that they always remain in place on the slicer so that the weight of the removable parts for cleaning is kept to a minimum. The slicer is therefore easier to clean which enhances

the hygiene, while the slicer also provides a high degree of convenience both during operation and during cleaning. This is all done without sacrificing the safety of the slicer.

From the foregoing it will be clear that the invention provides a slicer which excels in hygiene, convenience and safety.

[0021] The invention is not restricted to the embodiment shown in the drawings and described hereinbefore which may be varied in different manners within the scope of the invention. For example an embodiment is conceivable in which there are mounted two pivoting arms on sleeve 13. One arm is connected to the grip 16 whereas the other arm is connected to the pusher plate 20. The guard 18 has its own pivoting means on sleeve 13 or includes a pivoting arm connected to sleeve 13. In this manner, the guard 18 may pivot independently of grip 16 and pusher plate 20 so as to be able to occupy a low position on the slicing table 6 behind the product to be sliced, while the pusher plate 20 is positioned on top of the product.

Claims

1. A slicer comprising a frame having a driven slicing knife mounted thereon, a table for supporting the product to be sliced, the table being movable parallel to the slicing knife, and a pusher assembly connected to the table in a manner pivotable about an axis perpendicular to the slicing knife and movable parallel to said axis by means of a grip, said pusher assembly including a pusher plate and a guard between the pusher plate and the grip, characterized in that the pusher plate is spaced from the guard.
2. A slicer according to claim 1, wherein the distance between the pusher plate and the guard is at least 60 mm.
3. A slicer according to one of the preceding claims, wherein the pusher plate is an L-shaped plate which is removably attached to a mounting member of the grip by means of a screw knob.
4. A slicer according to one of the preceding claims, wherein the pusher assembly is pivotally connected to the table by means of a pivoting arm which is pivotally mounted on a shaft between the grip and the pusher plate.
5. A slicer according to claim 4, wherein the shaft is mounted in line with a first part of the grip, and the guard is fixedly mounted between the shaft and the grip.
6. A slicer according to claim 4, wherein the guard is pivotally mounted independently of the grip and

pusher plate.

7. A slicer according to one of the preceding claims,
wherein the grip includes a first portion adjacent and
perpendicular to the guard and a second portion 5
slightly angled to the first portion, preferably in a for-
ward and downward direction.
8. A slicer according to any one of the preceding
claims, wherein the guard is a substantially flat plate 10
extending fully across the table.
9. A slicer according to one of the preceding claims,
wherein the table comprises a lower table member
and an upper table member the upper table member 15
being pivotally and removably mounted to the lower
table member.
10. A slicer according to claim 9, further comprising a
front guard which is attached to the lower table 20
member in front of the upper table member.

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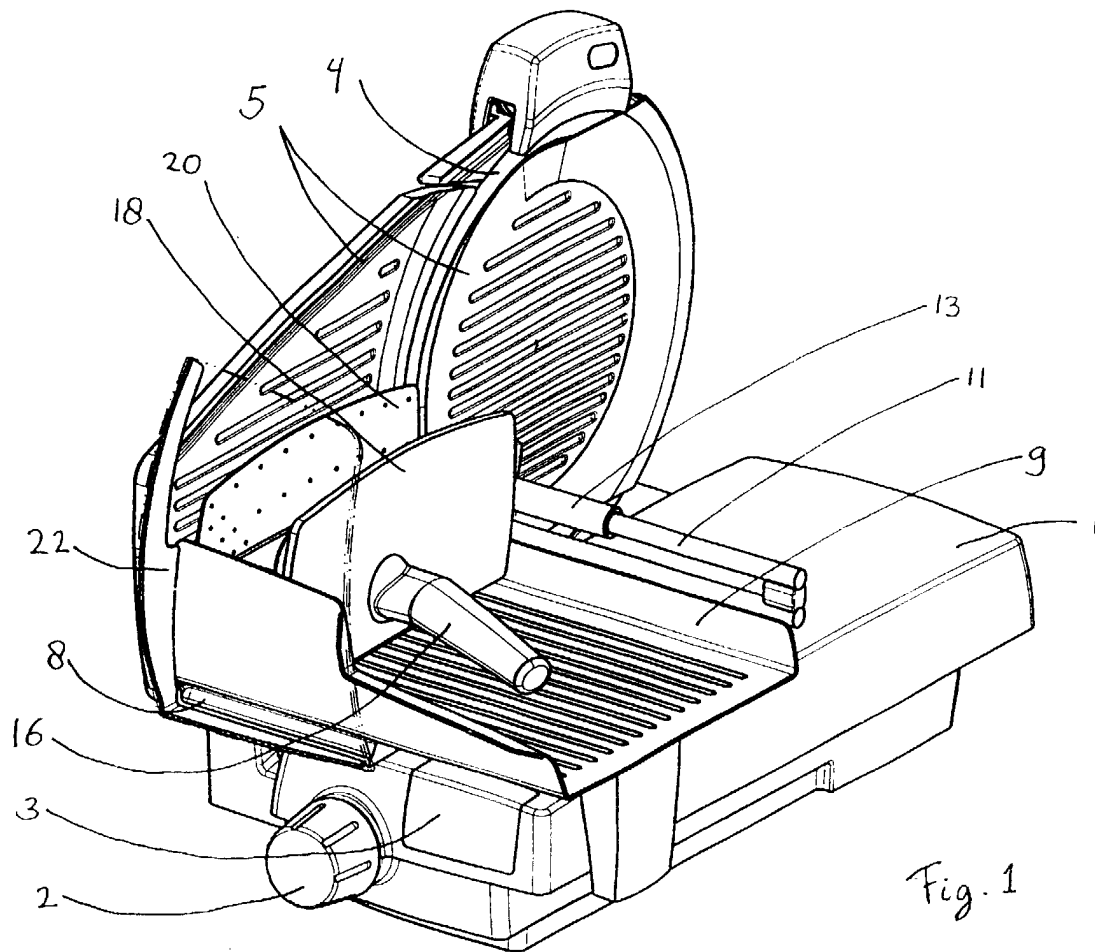


Fig. 1

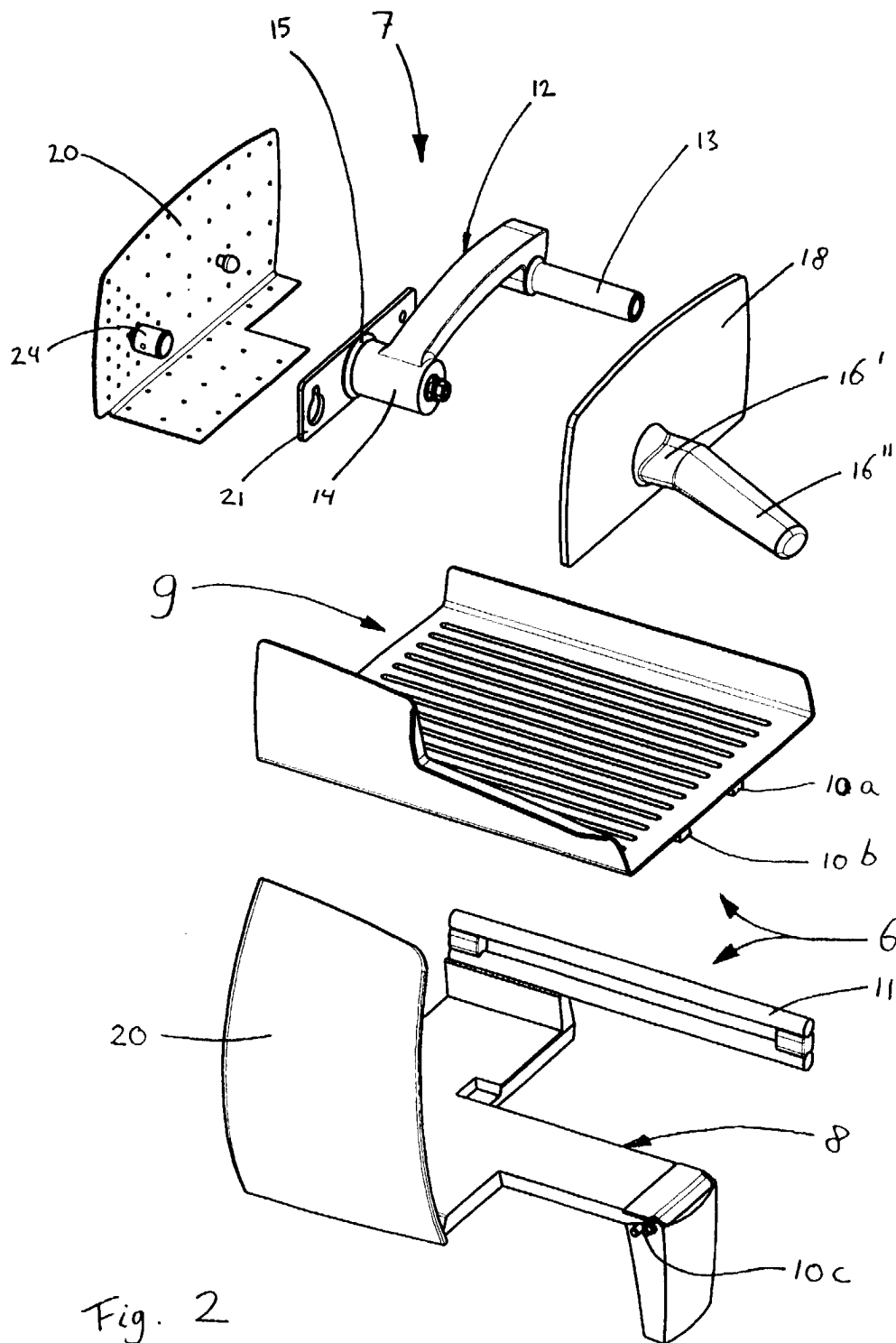


Fig. 2

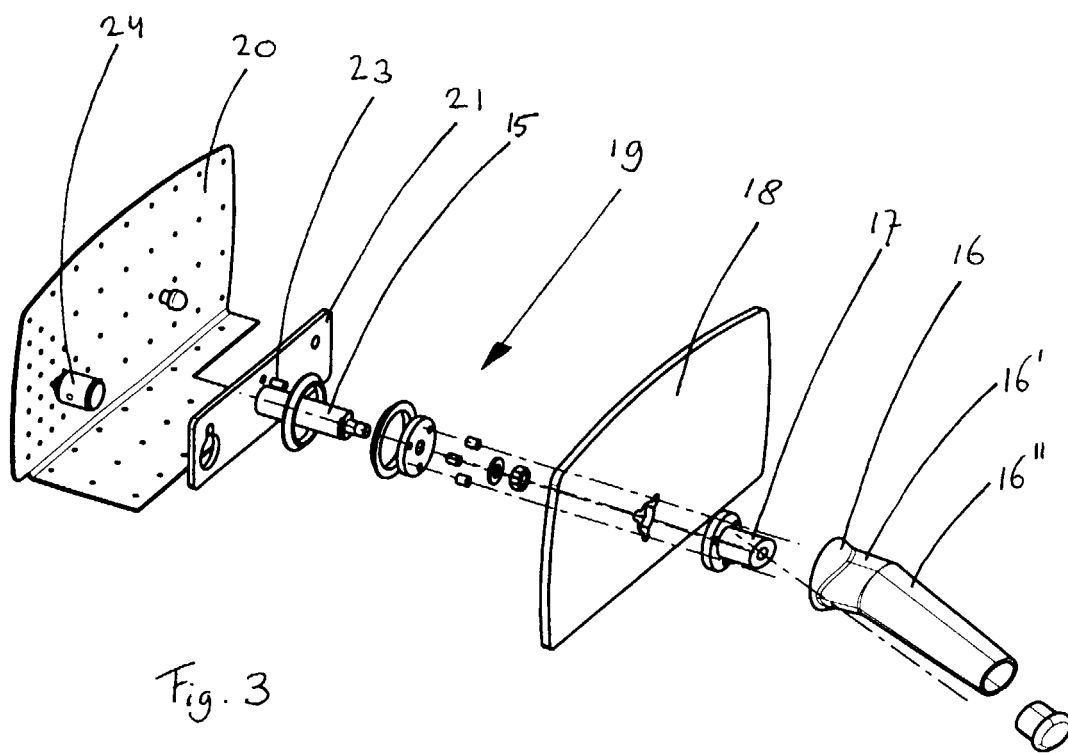


Fig. 3