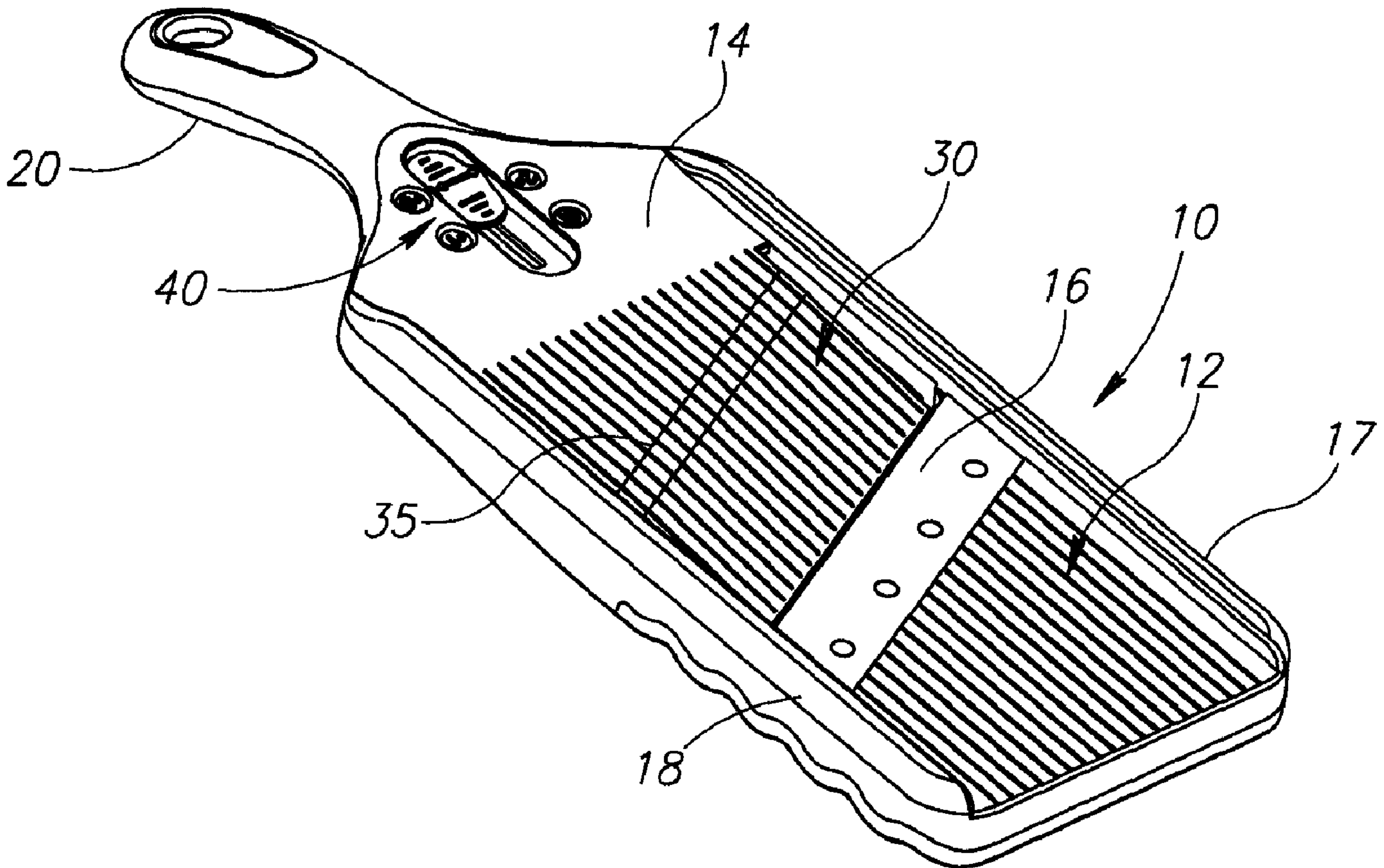




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 (54) Title: HAND-HELD SLICER



(57) Abrégé/Abstract:

A hand-held slicing device having a handle connected to a slicing tray. The slicing tray includes a ramp leading to a fixed blade. The ramp is readily adjustable such that the height of the edge of the ramp most closely adjacent the blade can be raised or lowered. In

(57) **Abrégé(suite)/Abstract(continued):**

one version, the ramp can be raised or lowered by sliding a support structure connected to a knob that can be slideably adjusted by the user's thumb. The device may include a series of julienne blades that are selectively extendable above the slicing ramp or retractable below the ramp.

HAND-HELD SLICER

ABSTRACT OF THE DISCLOSURE

A hand-held slicing device having a handle connected to a slicing tray. The slicing tray includes a ramp leading to a fixed blade. The ramp is readily adjustable such that the height of the edge of the ramp most closely adjacent the blade can be raised or lowered. In one version, the ramp can be raised or lowered by sliding a support structure connected to a knob that can be slideably adjusted by the user's thumb. The device may include a series of julienne blades that are selectively extendable above the slicing ramp or retractable below the ramp.

HAND-HELD SLICER

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FIELD OF THE INVENTION

[0001] This invention relates generally to slicing devices, particularly including hand-held mandoline-type slicing devices.

BACKGROUND OF THE INVENTION

[0002] There are a variety of slicing devices currently available, including slicers of the mandoline type. Many of the hand-held slicers have no ability to adjust the thickness of the slices that can be made, while those that are adjustable have adjustment mechanisms that are awkward or inconvenient to use.

SUMMARY OF THE INVENTION

[0003] In a preferred version, the invention comprises a hand-held slicing device having a handle connected to a slicing tray. The slicing tray includes a ramp leading to a

fixed blade. The ramp is readily adjustable such that the height of the edge of the ramp most closely adjacent the blade can be raised or lowered. In one version, the ramp can be raised or lowered by sliding a support structure connected to a knob. Most preferably, the knob is positioned adjacent the handle so that it can be slideably adjusted by the user's thumb.

[0004] An alternate version includes a series of julienne blades that are selectively extendable above the slicing ramp or retractable below the ramp. In the extended position, a food item is separated into strips as it is sliced, thereby producing individual strips while slicing.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Figure 1 is a perspective view of a preferred hand-held slicer.

[0006] Figure 2 is a top view of the hand-held slicer of Figure 1.

[0007] Figure 3 is a bottom view of the hand-held slicer of Figure 1.

[0008] Figure 4 is a side view of an alternate slicer which incorporates julienne blades.

[0009] Figure 5 is a bottom view of the slicer of Figure 4.

[0010] Figure 6 is a top view of the slicer of Figure 4.

[0011] Figure 7 is a sectional view taken along line A-A in Figure 6.

[0012] Figure 8 is an exploded view of the slicer of Figure 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] The preferred version of the slicer includes a slicing tray 10 having a handle 20 at one end. The slicing tray has a distal end 12 opposite the handle and a proximal

end 14 adjacent the handle. A blade 16 is secured to the distal end of the tray and, in the preferred version as shown extends angularly across the tray. The blade as shown includes a series of holes for receiving pegs extending upward from the tray to affix the blade to the tray.

[0014] The two opposing sides of the tray each include an upwardly extending flange forming a guide 17, 18 for retaining a hand guard or the food item to be sliced. The guide extends above the top surface of the tray on either side of the tray, and may extend below the lower surface of the tray and form a frame for carrying the brace, julienne blade bar, and cam as further described below. The tray may optionally include a plurality of longitudinal ribs substantially parallel with the guides and spaced apart along the tray to facilitate sliding motion of a food item along the tray. In an exemplary version the tray is formed integrally from clear plastic, though metals or other materials may also be used.

[0015] A ramp 30 is formed in the proximal end of the tray. The ramp is created by a channel formed in the tray that provides a gap between the ramp and each of the opposing guides and the distal end of the tray. Thus, the channel has three sections, including a first section 31 running along one of the guides, a second section 32 adjacent the length of the blade, and a third section 33 running along the other of the two guides. In the version as illustrated in Figures 1-3, the tray, including the ramp, is integrally formed with the channel being created as part of the molding process. In other versions, such as shown in Figures 5-8, the ramp may be created separately and secured to one or more of the guides, handle, and distal end of the tray.

[0016] The ramp is further formed during the molding process (or otherwise affixed as described below) such that the distal end of the ramp (that is, the end most closely adjacent the blade) is naturally biased in a position below the blade. Accordingly, at its lowest position with respect to the blade, the position of the ramp provides a gap defining the largest slices expected to be created with the slicer. As discussed further below, the ramp is adjustable to move the distal end of the ramp upward to a position closer to the plane of the distal end of the tray.

[0017] In versions in which the ramp is integrally formed with the tray, a groove 35 is formed on the bottom surface of the ramp to decrease the strength of the ramp along the groove. Accordingly, the groove acts as a living hinge, thereby allowing the ramp to more readily bend along the groove. Preferably the groove follows a path that is parallel to lines defined by the end of the ramp and the cutting edge of the blade so that the ramp will be raised or lowered uniformly with respect to the blade.

[0018] An adjustment knob 40 is provided in a position adjacent the handle, and preferably close enough to the handle such that a user can trigger the adjustment knob while holding the slicer by the handle. The adjustment knob as shown is recessed in a trough below the top surface of the tray so that it is less likely to be inadvertently moved. As shown, the knob is in an elongated form having a central raised portion so that it can be readily moved in a sliding fashion in a first direction by pushing against the raised portion and then moved in an opposite second direction by pulling against the raised portion.

[0019] A lower portion of the knob includes a stem that is received within a longitudinal slot, thereby allowing the knob to move longitudinally back and forth within the slot. The longitudinal slot is generally axially aligned with and adjacent the handle. The stem connects to a brace 50 provided on the opposite side of the ramp, such that longitudinal movement of the knob causes corresponding longitudinal movement of the brace.

[0020] The brace is formed as an uneven U shape in which one side upright 54 of the U is longer than the other 52, with a cross-member 56 extending between the uprights. The cross-member is substantially straight and parallel to both the end of the ramp and the blade, though in other versions it may be otherwise configured. Each side of the upright includes a lateral tab that is received within a corresponding slot formed in the guides 17, 18 to retain the cross-member (and therefore the brace) against the bottom of the proximal end of the tray.

[0021] The bottom surface of the distal end of the ramp includes an incline, which in this case is formed with one or more steps 60. The steps are formed in a wall extending downwardly and generally orthogonal to the plane defined by the ramp. The height of the wall at a first step is relatively short and preferably about 1/16 to 1/8 inches in height. Additional steps may be provided as the wall moves in a direction from the proximal end toward the distal end of the ramp, with the steps defining progressive increases in wall height. Preferably the steps include increments of about 1/16 of an inch from one step to the next, and preferably there are four or more steps. Though one wall having a series of steps is described, the slicer may have multiple walls arranged parallel to one another for greater

support. In an example version, the lower surface includes four walls having four steps each, with the four walls being uniformly spaced along the cross-member and angularly offset in a manner parallel with the cross-member. Though the incline is formed with steps in the version as illustrated, in other versions the incline may have a smooth surface with no steps. Likewise, though the incline is formed on the bottom of the ramp in the version as shown, in other versions the incline may be formed on the support and mate with a corresponding engagement surface formed on the bottom of the ramp.

[0022] The cross-member 56 is configured to engage the steps 60 formed in the wall. As the knob is urged from the proximal end of the ramp toward the distal end of the ramp, it causes the brace to travel in the same direction and therefore the cross-member to encounter steps of increasing height. Because the brace is held at a fixed vertical position by virtue of the tabs and corresponding slots in the guides, when the brace engages a step of increased height it causes the ramp to move farther away from the brace. This stepwise movement of the ramp causes the ramp to move into a plane that is increasingly closer to the same plane as that of the distal end of the tray.

[0023] When the knob is at a first position most closely adjacent the handle, the ramp is at its lowest position with respect to the tray and therefore an item that is sliced will be relatively thick. The actual thickness will be defined by the design process, as a function of the bend in the ramp, the construction of the brace and steps, and the plane of the tray. Each successive movement of the knob that forces the cross-member onto a higher step causes the ramp to move higher, thereby reducing the size of the gap between the ramp and

the blade and forming thinner slices. In the version as shown, the most distant position of the knob pushes the cross-member into engagement with a step that raises the ramp to a position that is even with or slightly higher than the plane defined by the blade. This final position is useful for storage or for locking the device into a safe position in which the user is unlikely to be accidentally cut by an exposed blade.

[0024] Along the sides of the trough retaining the knob, one or more markings 70 is provided to indicate to the user the corresponding step or height of the ramp. The markings may indicate different step numbers in an incremental fashion (e.g., 1, 2, 3, etc.), or may indicate actual thicknesses of the gap between the ramp and the blade, and therefore the thickness of the corresponding slice (e.g., 1/16", 1/8", etc.). A final marking may include an icon such as a padlock or other symbol to indicate the position to be used for storage or safety.

[0025] The lower side of the distal end of the tray preferably includes a non-skid surface. As shown, the lower surface includes one or more scallops or undulating surfaces that allows the slicer to be readily secured to the rim of a bowl or the like in order to slice food items into a bowl. In a preferred example, the lower perimeter of the distal end of the ramp is formed from an elastomeric or other non-skid material.

[0026] A hand guard is optionally provided to allow food items to be sliced while keeping the hand of the user safely out of the path of the blade. In the preferred version, the hand guard includes an upper grip on a top surface and a plurality of downwardly depending spikes configured to engage a food item so that it can be used to move the food item back

and forth across the tray. The hand guard may include optional peripheral flanges sized and configured to be received within the sides of the guards to facilitate even, longitudinal movement of the guard along the tray.

[0027] Some versions of the invention further include a julienne slicing feature, as shown in Figures 4-8. In such a version, the edge of the ramp 30 adjacent the blade 16 is formed with a series of slots 104. As shown, the slots are evenly spaced along the entire edge of the ramp. In one version, the ramp includes sixteen slots spaced approximately $\frac{1}{4}$ inch apart and having a depth of about $\frac{1}{2}$ inch. In other versions, the slots may be spaced closer together or farther apart (to create thinner or thicker sliced strips, as discussed below), and may have a larger or smaller depth, as desired. Likewise, the slots may extend only along a portion of the edge of the ramp.

[0028] A series of julienne blades 104 is provided and attached to the slicing device such that a blade is positioned beneath each of the slots 104. The blades are secured to the device in a manner that allows them to selectively retract below the top surface of the ramp or to enable each one of the blades to extend through a corresponding one of the slots in the ramp, as desired.

[0029] In a preferred implementation, the blades 102 are secured to a bar 100, with the plurality of blades being spaced apart along the bar 100 in a manner that corresponds to the size and spacing of the slots 104. The bar is generally rectangular in cross section. Each of the blades includes a sharpened, angled edge facing toward the handle. The bar includes a first end and a second end, with each of the first and second ends being received channels

formed in opposing sidewalls of the slicer beneath the guides 17, 18. A spring is provided adjacent each of the first and second ends between the bar 100 and a surface of the device adjacent an upper portion of the ramp, with the springs being configured to urge the bar 100 in a downward position, away from the ramp. In the lowest downward position the bar is sufficiently low that the blades are fully retracted beneath the ramp.

[0030] The bar 100 includes an upper surface from which the blades 102 extend and an opposing lower surface. The lower surface rests against a cam 80 that is pivotally secured to the slicer. The cam includes a handle 81 pivotally attached to the cam along a central axis of the cam. The cam further includes a first outer surface 82 and a second outer surface 83, the first outer surface being radially closer to the central axis while the second outer surface is radially farther out from the central axis. The cam is pivotally secured within the slicer such that the bar 100 rests against the cam, with the bar being pushed toward the cam by the springs. When the cam is rotated such that the bar rests against the first outer surface, the bar is relatively more distant from the ramp. When the cam is rotated such that the bar rests against the second outer surface, the bar is pushed upward, toward the ramp, because of the greater radial distance of the second outer surface. In this cam position, the bar and its accompanying blades are pushed upward so that the blades extend through the slots formed in the ramp, thereby allowing the slicer to be used to make strips of a food item being pushed through the slicer.

[0031] In alternate versions of the invention, structures other than a cam may be used. Thus, for example, the bar may be movable via a dial, screws, a series of notches in the frame, or other such structures.

[0032] In the version of Figures 5-8, the ramp is formed separately from the slicer and held in place by a pair of resilient leaf springs or the like. Thus, a pair of springs 90, 91 are secured to the slicer adjacent the handle. The ramp 30 includes a pair of pins 120, 121 extending laterally outward at the end of the ramp opposite the slots. The pins are received within corresponding holes formed in the sidewalls of the slicer to pivotally secure the ramp to the slicer. A pair of tabs 122, 123 is provided in positions extending laterally from the guides just below the ramp, with one tab located on each of the opposite sides of the ramp adjacent the grooves. The tabs provide support for the distal end of the ramp, ensuring that it does not pivot downward below the level of the blade any farther than a desired distance.

[0033] The ramp is pivotally secured to the tray along a pivot axis extending through the pins 120, 121. Preferably, the pivot axis and the handle are each located adjacent the proximal end of the tray, and the pivot axis is generally orthogonal to an axis defined by the handle. The blade and the distal end of the ramp each form an angle that is non-parallel with the pivot axis.

[0034] In the version as shown, the springs 90, 91 include distal ends 92, 93 that are curved. The curved distal ends of the springs engage corresponding elongated and rounded bearing surfaces extending below the ramp. The bearing surfaces are shaped such that upward pivotal movement of the ramp pushes the spring downward, increasing the urging

force of the spring against the ramp in order to urge the ramp back into a downward-pivoted position.

[0035] While the preferred embodiment of the invention has been illustrated and described, as noted above, many changes can be made without departing from the spirit and scope of the invention. Accordingly, the scope of the invention is not limited by the disclosure of the preferred embodiment. Instead, the invention should be determined entirely by reference to the claims.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A slicing device, comprising:
 - a tray defining a plane and having a proximal end and a distal end, an upper surface and a lower surface;
 - a handle secured to the tray;
 - a ramp forming a portion of the tray, the ramp having a first end and a second end an upper surface and a lower surface, the first end being pivotally secured to the slicing device such that the ramp is pivotable through a range of motion including a first position in which the upper surface of the ramp lies substantially within the plane defined by the upper surface of the tray and a second position in which the upper surface of the ramp is pivoted toward the lower surface of the tray;
 - a blade secured to the distal end of the tray, the blade having a sharpened edge and being positioned on the distal end of the tray such that the sharpened edge is closely adjacent the second end of the ramp when the ramp is in the first position;
 - a brace engaged with the lower surface of the ramp, at least one of the ramp and the brace having an incline surface and the other of the ramp and the brace having an engagement surface for contacting the incline surface, whereby lateral movement of the brace causes the engagement surface to contact a different portion of the incline surface and to pivotally move the ramp; and
 - a knob adjacent the handle and connected to the brace, the knob being moveable to cause a corresponding movement of the brace.
2. The slicing device of claim 1, wherein the incline comprises a plurality of steps.

3. The slicing device of claim 2, wherein the plurality of steps are formed on the lower surface of the ramp and the engagement surface is formed on the brace.
4. The slicing device of claim 3, further comprising a pair of guides, the pair of guides extending above the top surface of the tray along opposite sides of the tray from the proximal end to the distal end.
5. The slicing device of claim 4, wherein the handle is secured adjacent the proximal end of the tray and the ramp is pivotally secured to the proximal end of the tray to form a pivot axis, the pivot axis of the ramp being generally orthogonal to an axis defined by the handle, and further wherein the sharpened edge of the blade is non-parallel with the pivot axis.
6. The slicing device of claim 5, wherein the incline comprises a first incline, a second incline, and a third incline, each having a plurality of steps, and further wherein the brace is formed in an uneven U-shape having a first upright and a second upright, the first upright being longer than the second upright, and a cross-member extending from the first upright to the second upright, the cross-member engaging each of the first incline, the second incline, and the third incline to adjustably support the ramp.
7. The slicing device of claim 6, further comprising a trough formed in the tray adjacent the handle, the knob being slideably moveable within the trough.
8. The slicing device of claim 7, wherein the ramp is further pivotable to a position in which the second end of the ramp is above the sharpened edge of the blade.
9. The slicing device of claim 8, wherein the ramp is integrally formed with the tray.

10. The slicing device of claim 8, wherein the ramp is formed separately from the tray, the ramp further having a pair of pivot pins for pivotally securing the ramp to the tray.
11. The slicing device of claim 8, further comprising a tab extending laterally inward from at least one of the pair of guides, the tab engaging a lower surface of the ramp to prevent pivotal movement of the ramp beyond the second position.
12. The slicing device of claim 1, wherein the ramp further comprises a plurality of slots, the slicing device further having a plurality of julienne blades, the julienne blades being secured to the slicing device in a position whereby relative movement of the julienne blades with respect to the ramp enables the julienne blades to be selectively retracted below the ramp or deployed through the plurality of slots.
13. The slicing device of claim 12, further comprising a frame formed on opposite sides of the tray from the first end to the second end, the julienne blades being supported by a bar supported by the frame and positioned adjacent the lower surface of the tray.
14. The slicing device of claim 13, further comprising a means for moving the bar toward and away from the lower surface of the tray.
15. The slicing device of claim 13, further comprising a cam pivotally mounted to the frame, the cam having a central axis, a first surface and a second surface, the cam being rotatable to a first position in which the first surface is in contact with the bar and a second position in which the second position is in contact with the bar, the second surface lying radially farther outward from the central axis than the first surface, whereby when the cam is rotated to the first position the plurality of julienne blades are retracted below the ramp and when the cam is rotated to the

second position the bar is more closely adjacent the ramp and the plurality of julienne blades is extended through the plurality of slots.

16. The slicing device of claim 15, further comprising a handle extending laterally beyond the blade and connected to the cam.
17. The slicing device of claim 15, further comprising at least one spring connected to the frame and the bar, whereby the spring urges the bar away from the lower surface of the tray.
18. The slicing device of claim 17, wherein the lower surface of the distal end of the tray further comprises a scalloped surface.

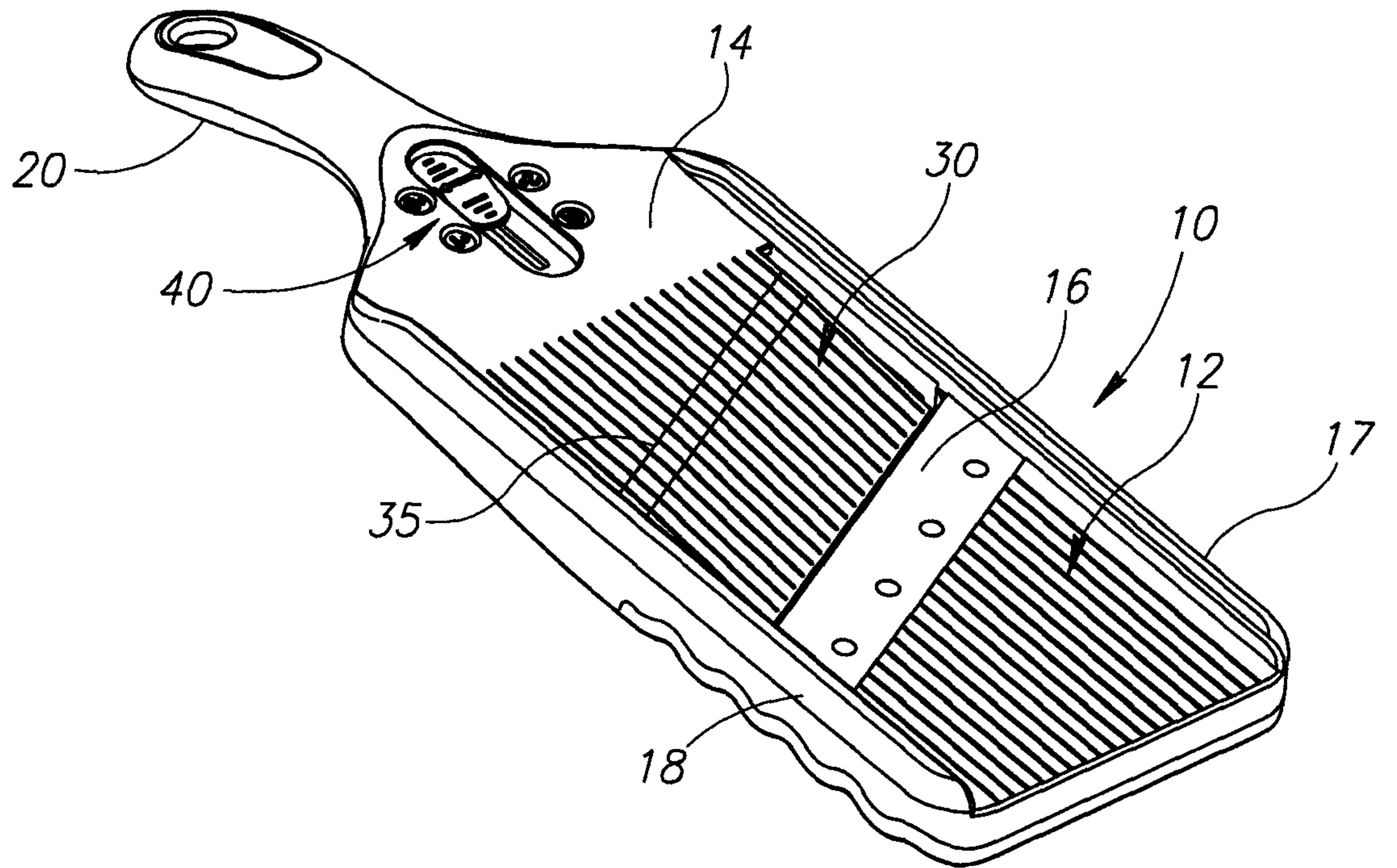


FIG.1

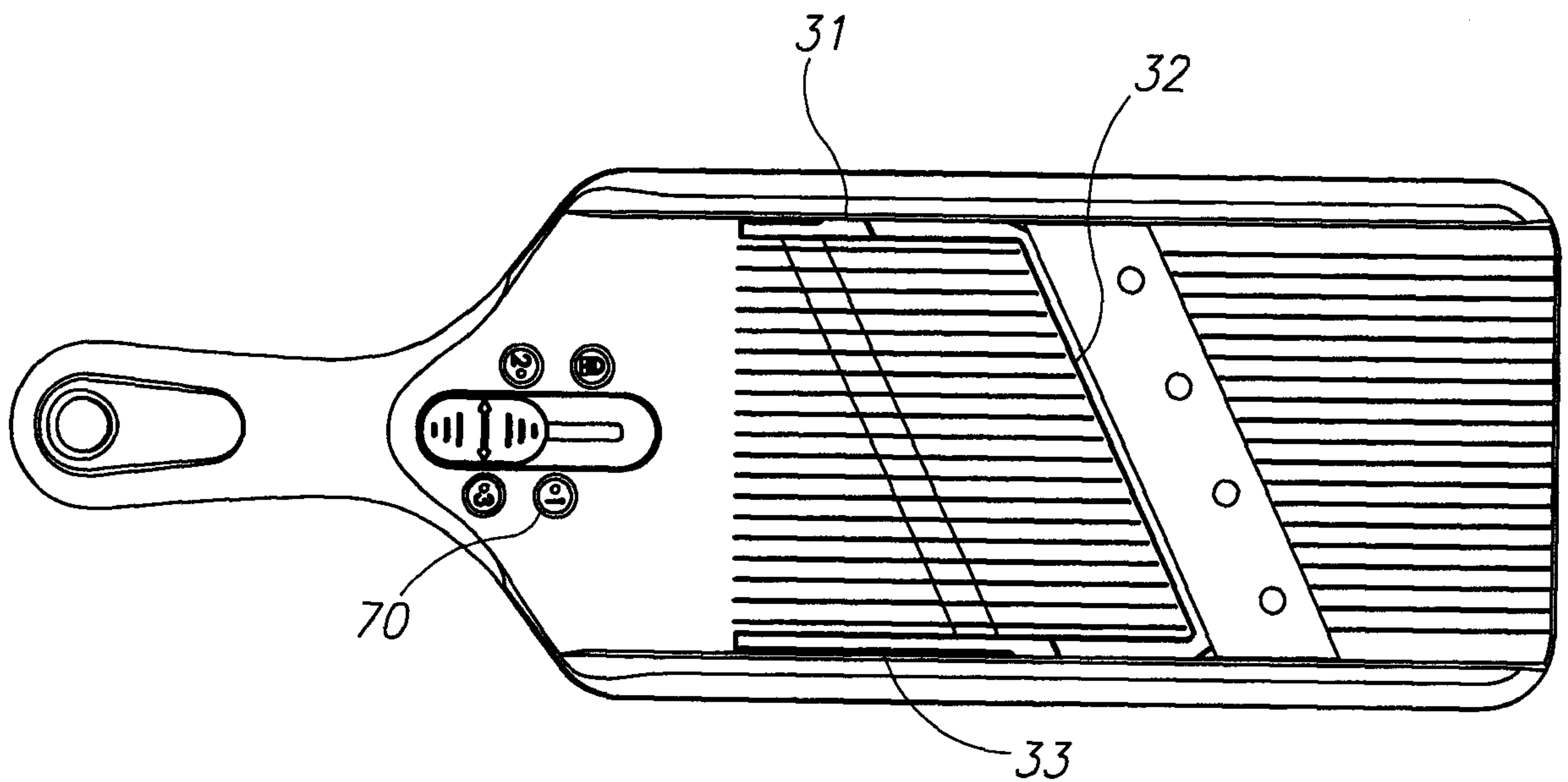


FIG.2

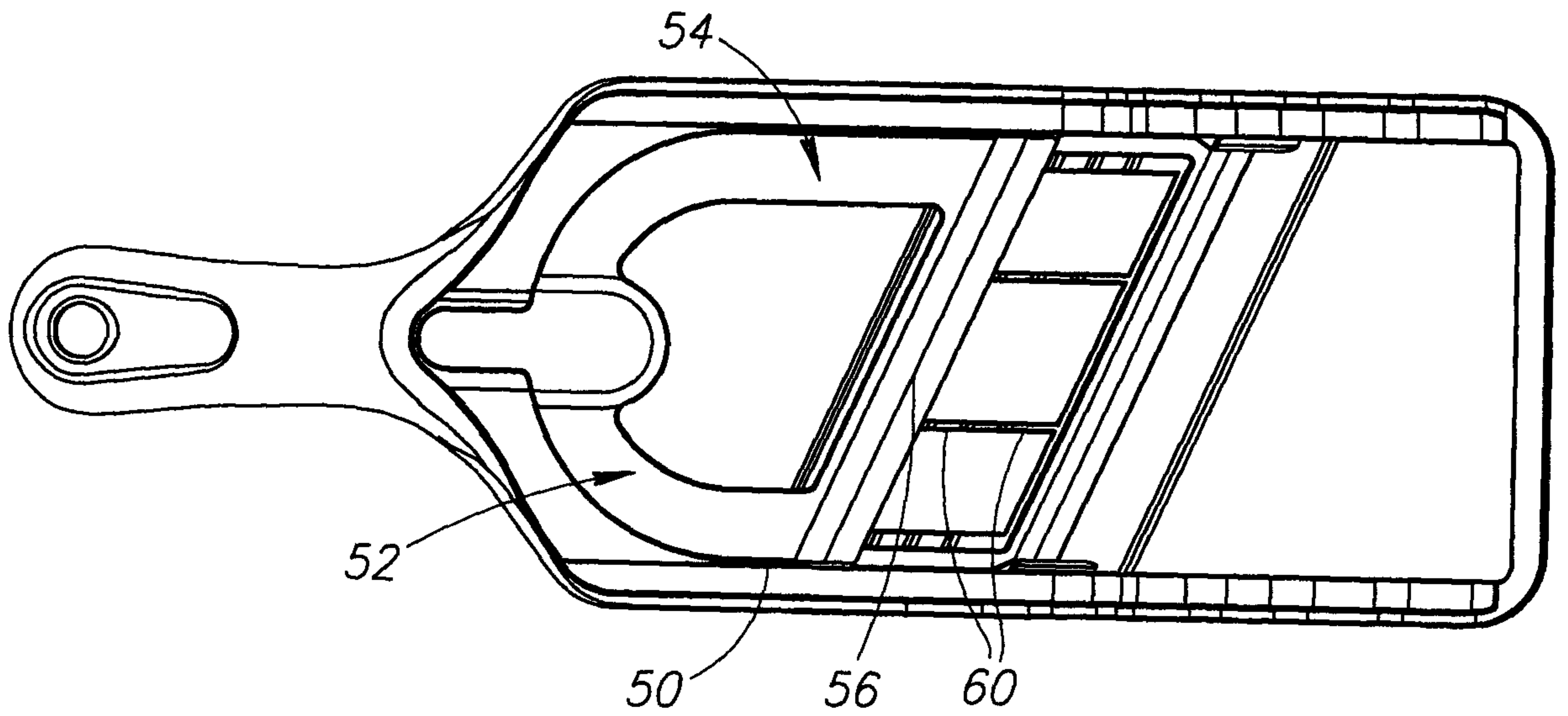


FIG. 3

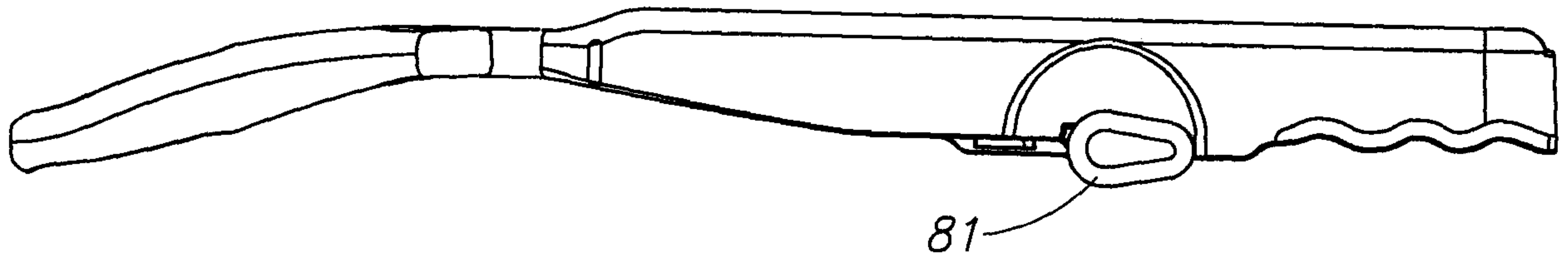


FIG. 4

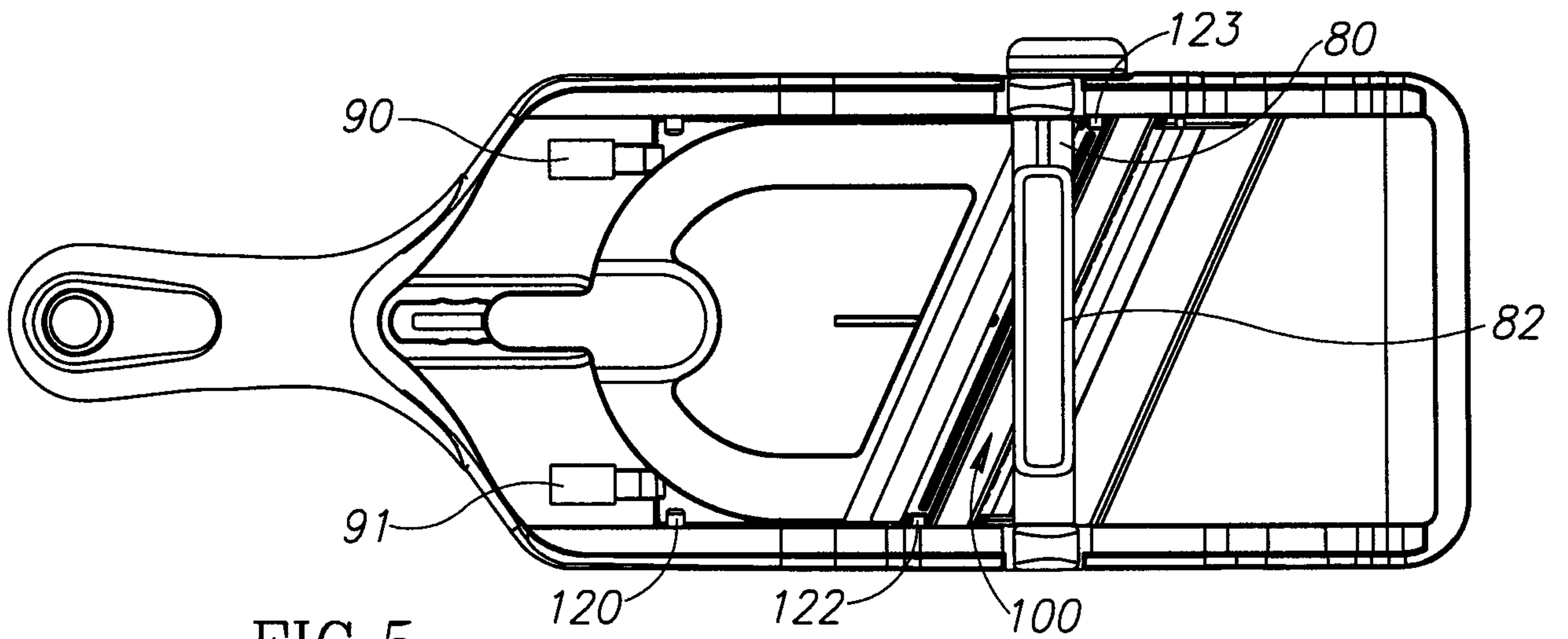


FIG. 5

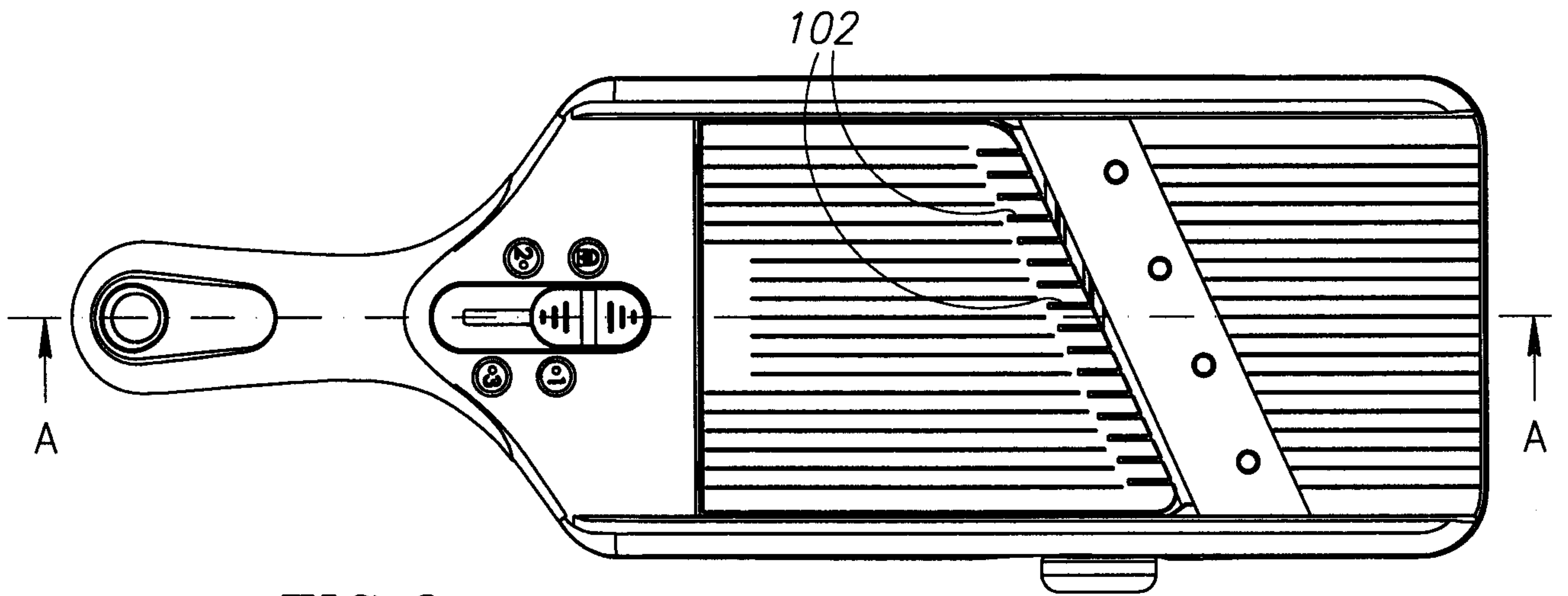


FIG. 6

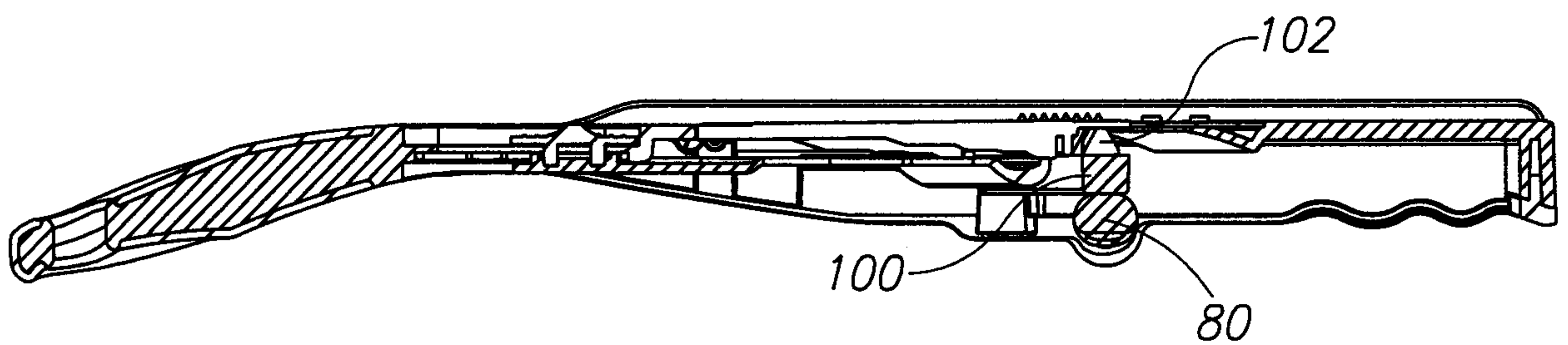


FIG. 7

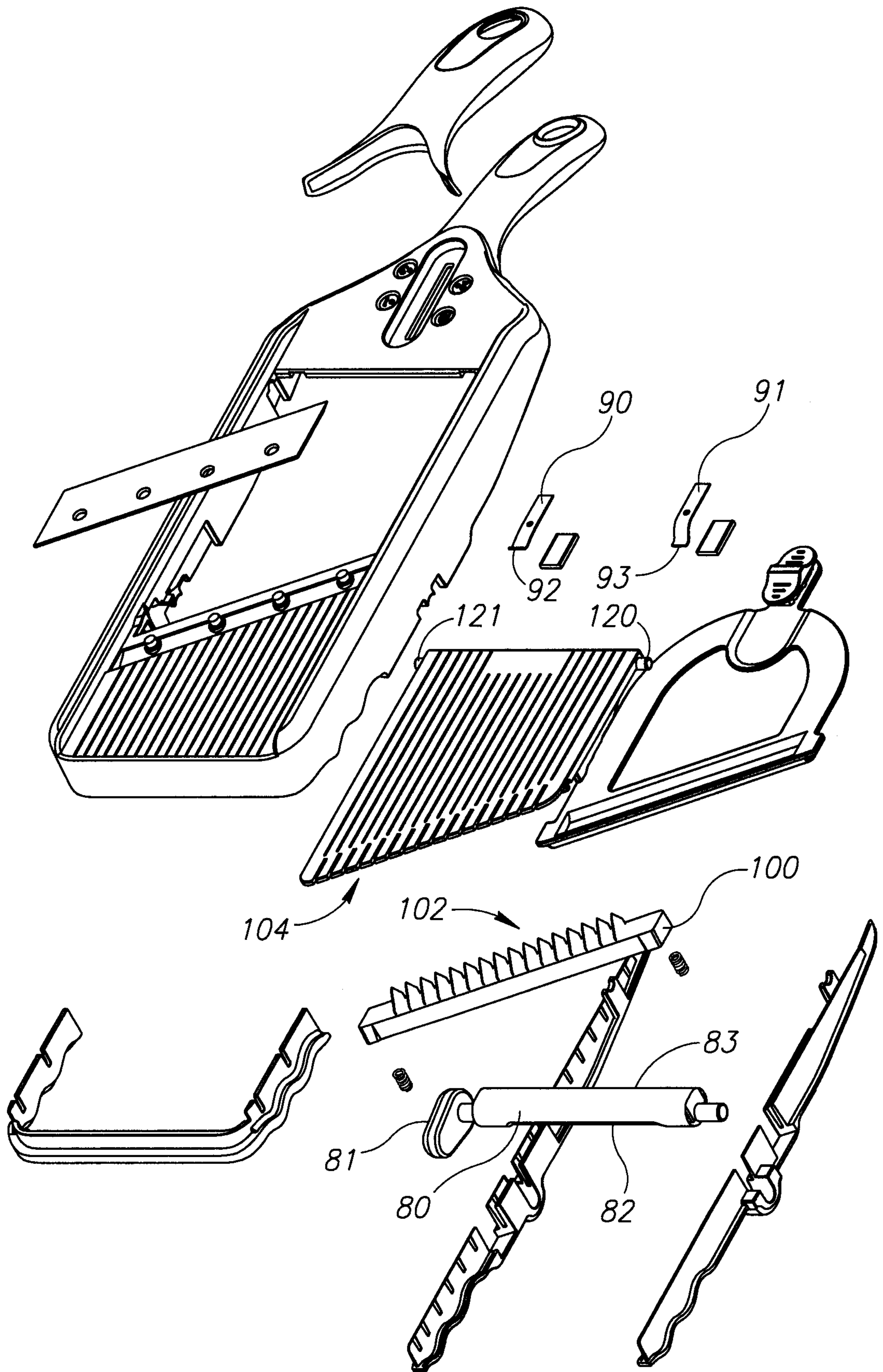


FIG. 8

