Dicing Machine

Technical Field

The present application relates to the technical field of food processing, and in particular to a dicing machine.

Background

At present, fruits and berries are cut into dices as raw materials and added to foods and drinks to improve tastes of foods and drinks. In order to ensure freshness of diced fruit, it is necessary to use s dicing machine to chop fresh fruits. However, a conventional dicing machine needs multiple cutters to cooperate with each other, and distances between the multiple cutters are relatively small, which makes an internal structure of the dicing machine complex, and the cutters are prone to collide with the dicing machine. Besides, the dicing machine occupies a large area, which is not suitable for families and small stores with a poor user experience.

Summary

An embodiment of the present application provides a dicing machine.

The dicing machine according to the embodiment of the present application includes:

a mounting platform provided with a discharge port;

a cutter module mounted on the mounting platform and located above the discharge port, wherein the cutter module includes a first assembly and a second assembly, the first assembly is movable with respect to the mounting platform along a first direction, the second assembly is movable with respect to the mounting platform along a second direction, and the first direction is perpendicular to the second direction; and

a cutter disk disposed below the discharge port and rotatable around a vertical direction; and

a driving mechanism including a motor, two first transmission mechanisms and one

second transmission mechanism, wherein the motor is used for driving the first assembly and the second assembly to reciprocate by the two first transmission mechanisms, and for driving the cutter disk to rotate around the vertical direction by the second transmission mechanism.

In the dicing machine according to the embodiment of the present application, the dicing machine includes the mounting platform, the cutter disk and the driving mechanism, the mounting platform is provided with the discharge port. The cutter module is mounted on the mounting platform and located above the discharge port. The cutter module includes the first assembly and the second assembly, the first assembly is movable with respect to the mounting platform along the first direction, the second assembly is movable with respect to the mounting platform along the second direction, and the first direction is perpendicular to the second direction. The cutter disk is disposed below the discharge port and is rotatable around the vertical direction. The driving mechanism includes the motor, the two first transmission mechanisms and one second transmission mechanism, the motor is used for driving the first assembly and the second assembly to reciprocate by the two first transmission mechanisms, and for driving the cutter disk to rotate around the vertical direction by the second transmission mechanism. In this way, the dicing machine can drive different cutters to move synchronously in different ways through the driving mechanism, and then can cut materials such as fruits into dices. By modularizing the cutter and mounting the cutter module on the mounting platform, the whole driving mechanism is compact in structure, occupies less space and is light in weight, thus reducing a volume of the dicing machine, with a better user experience.

In some embodiments, the first assembly includes a first member and multiple first cutters mounted on the first member, and a first clamping structure is formed on the first member.

In some embodiments, the second assembly includes a second member and multiple second cutters mounted on the second member, and a second clamping structure is formed on the second member.

In some embodiments, the dicing machine further includes a discharge assembly, the discharge assembly includes a push member and a discharge sleeve, and the push member is movably inserted in the discharge sleeve.

In some embodiments, the push member includes a push rod and a push head, the push

head is connected to one end of the push rod, a first slot and a second slot are formed in the push head, the first slot and the second slot are disposed in a staggered manner, and the first slot and the second slot are both recessed towards the push rod from a side of the push head away from the push rod.

In some embodiments, the push head includes a substrate and multiple protruding posts, the multiple protruding posts and the push rod are respectively located at opposite sides of the substrate, and the multiple protruding posts are disposed at intervals and define the first slot and the second slot.

In some embodiments, the cutter module further includes a cutter, the cutter includes a blade edge side and a blade back side opposite to the blade edge side, multiple blade teeth disposed at intervals are formed on the blade edge side, an arcuate groove is disposed between two adjacent blade teeth, blade edges are formed at the edges of the blade teeth and the grooves, and the blade edges are located at a middle part of the cutter in a thickness direction.

In some embodiments, the groove is in a shape of circular arc.

In some embodiments, the dicing machine further includes a cutter disk, the cutter disk includes a disk body and a blade, a sinking recess is formed on the disk body, a bottom surface of the sinking recess is provided with a boss, the disk body is provided with a via hole, the via hole penetrates the disk body along a thickness direction of the disk body and communicates with the sinking recess, the blade is mounted on a surface of the boss facing away from the bottom surface of the sinking recess, and a channel for the material to pass through is formed between the blade and the via hole.

In some embodiments, the blade includes a blade edge, a blade back, and a blade side surface connecting the blade edge and the blade back, the blade side surface faces downward, the blade side surface includes an inclined surface which extends in a direction from the blade edge towards the blade back and is inclined downward.

Some of additional aspects and advantages of the present application will be set forth in the following description, will become apparent from the following description or will be acknowledged from the practice of the present application.

Brief Description of Drawings

The above and/or additional aspects and advantages of the present application will become apparent and be readily understood from the description of the embodiments taken in conjunction with the following drawings.

FIG. 1 is a schematic diagram of a three-dimensional structure of a dicing machine according to an embodiment of the present application.

FIG. 2 is a schematic diagram of an exploded structure of a dicing machine according to an embodiment of the present application.

FIG. 3 is a schematic diagram of a structure of a driving mechanism according to an embodiment of the present application.

FIG. 4 is a schematic diagram of an exploded structure of a cutter module according to an embodiment of the present application.

FIG. 5 is a schematic diagram of a structure of a cutter according to an embodiment of the present application.

FIG. 6 is an enlarged structural diagram of part I in FIG. 3 according to an embodiment of the present application.

FIG. 7 is a schematic diagram of a structure of a locking assembly according to an embodiment of the present application.

FIG. 8 is another schematic diagram of a three-dimensional structure of a dicing machine according to an embodiment of the present application.

FIG. 9 is a schematic diagram of a three-dimensional structure of a cutter disk according to an embodiment of the present application.

FIG. 10 is a schematic diagram of a three-dimensional structure of a disk body according to an embodiment of the present application.

FIG. 11 is a schematic diagram of a three-dimensional structure of a blade according to an embodiment of the present application.

FIG. 12 is a schematic diagram of a cross-sectional structure of a blade according to an

embodiment of the present application.

FIG. 13 is a schematic diagram of a planar structure of a cutter disk according to an embodiment of the present application.

FIG. 14 is a schematic diagram of an exploded structure of a cutter disk according to an embodiment of the present application.

FIG. 15 is another schematic diagram of a structure of a driving mechanism according to an embodiment of the present application.

FIG. 16 is a schematic diagram of a structure of a dicing machine according to an embodiment of the present application.

FIG. 17 is another schematic diagram of a structure of a dicing machine according to an embodiment of the present application.

FIG. 18 is a schematic diagram of a structure of a push member according to an embodiment of the present application.

FIG. 19 is a schematic diagram of a structure of a cutter module according to an embodiment of the present application.

FIG. 20 is a schematic exploded diagram of a cutter module according to an embodiment of the present application.

FIG. 21 is a schematic diagram of a structure of a cutter according to the embodiment of the present application.

FIG. 22 is a schematic cross-sectional view of the cutter of FIG. 21 taken along C-C according to an embodiment of the present application.

FIG. 23 is a schematic bottom view of a push head according to an embodiment of the present application.

FIG. 24 is a schematic diagram of a structure of a push member viewed from another viewing angle according to an embodiment of the present application.

FIG. 25 is a schematic top view of a cutter module according to an embodiment of the present application.

FIG. 26 is a schematic exploded diagram of a dicing assembly according to an embodiment of the present application.

FIG. 27 is a schematic diagram of a structure of a discharge sleeve according to an embodiment of the present application.

FIG. 28 is a schematic diagram of a structure of a discharge assembly according to an embodiment of the present application.

Illustration for symbols of main elements:

dicing machine 1000;

cutter module 100, mounting bracket 101, first assembly 102, cutting tool 1002, first member 1021, first cutter 1022, second assembly 103, second member 1031, second cutter 1032, housing space 1011, blade edge side 11, blade back side 12, first clamping structure 105, first open slot 1051, first clamping slot 1012, second clamping structure 106, second open slot 1061, second clamping slot 1013, limiting post 107, limiting hole 1071, mounting platform 200, discharge port 201, receive box 202, cutter disk 300, driving mechanism 400, motor 41, first transmission mechanism 427, first rotating shaft 4271, eccentric wheel 4272, connecting rod 4273, rod body 4274, clamping block 4275, second transmission mechanism 428, discharge sleeve 52, locking assembly 60, first locking member 61, second locking member 62.

Detailed Description

Embodiments of the present application are described in detail below and examples of the embodiments are shown in the drawings, wherein identical or similar reference numerals always denote identical or similar elements or elements with identical or similar functions. The embodiments described below by referencing the accompanying drawings are exemplary and are intended for explanation only, rather than being construed as limitation on the present application.

In the present application, a first feature being located “above” or “below” a second feature may include a direct contact between the first feature and second feature, or may include that the first feature and second feature are contacted through an additional feature between

them instead of being in direct contact, unless expressly specified or defined otherwise. Moreover, the first feature being located “above”, “atop of”, or “on” the second feature includes the first feature being located directly above or obliquely above the second feature, or simply indicates that a horizontal height of the first feature is greater than that of the second feature. The first feature being located “below”, “under” or “underneath” the second feature includes the first feature being located directly below or obliquely below the second feature, or simply indicates that the horizontal height of the first feature is less than that of the second feature.

The following disclosure provides many different implementations or examples for implementing different structures of the present application. In order to simplify the disclosure of the present application, components and arrangements of specific examples are described below. Obviously, they are only examples and are not intended to limit the present application. Further, reference numbers and/or reference letters may be repeated in different examples of the present application for the purposes of simplicity and clarity, and such repetition itself does not indicate a relationship among the various embodiments and/or arrangements discussed. In addition, examples of various specific processes and materials are provided in the present application, but those ordinarily skilled in the art will be aware of applications of other processes and/or use of other materials.

Referring to FIG. 1 to FIG. 4, a dicing machine 1000 according to an embodiment of the present application includes a mounting platform 200, a cutter disk 300, and a driving mechanism 400. The mounting platform 200 is provided with a discharge port 201. A cutter module 100 is mounted on the mounting platform 200 and located above the discharge port 201. The cutter module 100 includes a first assembly 102 and a second assembly 103. The first assembly 102 is movable with respect to the mounting platform 200 along a first direction A, the second assembly 103 is movable with respect to the mounting platform 200 along a second direction B, and the first direction A is perpendicular to the second direction B. The cutter disk 300 is disposed below the discharge port 201 and is rotatable around a vertical direction. The driving mechanism 400 includes a motor 41, two first transmission mechanisms 427 and one second transmission mechanism 428. The motor 41 is used for driving the first assembly 102 and the second assembly 103 to reciprocate by the two first transmission mechanisms 427 and

for driving the cutter disk 300 to rotate around the vertical direction by the second transmission mechanism 428.

In the dicing machine 1000 according to the embodiment of the present application, the dicing machine 1000 includes the mounting platform 200, the cutter disk 300 and the driving mechanism 400. The mounting platform 200 is provided with the discharge port 201. The cutter module 100 is mounted on the mounting platform 200 and located above the discharge port 201. The cutter module 100 includes the first assembly 102 and the second assembly 103. The first assembly 102 is movable with respect to the mounting platform 200 along the first direction A, the second assembly 103 is movable with respect to the mounting platform 200 along the second direction B, and the first direction A is perpendicular to the second direction B. The cutter disk 300 is disposed below the discharge port 201 and is rotatable around the vertical direction. The driving mechanism 400 includes the motor 41, the two first transmission mechanisms 427 and the second transmission mechanism 428. The motor 41 is used for driving the first assembly 102 and the second assembly 103 to reciprocate by the two first transmission mechanisms 427 and for driving the cutter disk 300 to rotate around the vertical direction by the second transmission mechanism 428. In this way, the dicing machine 100 can drive different cutters to move synchronously in different ways by the driving mechanism 400, and then can cut materials such as fruits into dices. By modularizing the cutters and mounting the cutter module 100 on the mounting platform 200, the entire driving mechanism 400 is compact in structure, occupies less space and is light in weight, thus reducing a volume of the dicing machine 1000, with a better user experience.

Referring to FIG. 2 and FIG. 4, in some embodiments, the cutter module 100 further includes a mounting bracket 101 detachably mounted on the mounting platform 200, and the first assembly 102 and the second assembly 103 are both movably mounted on the mounting bracket 101.

In this way, the first assembly 102 and the second assembly 103 are mounted on the mounting bracket 101, so that the mounting bracket 101 can define movement directions of the first assembly 102 and the second assembly 103, and then the mounting bracket 101 is detachably disposed on the mounting platform 200, thereby achieving positioning of the cutters

and other members of the dicing machine 1000. Furthermore, when a cutter is damaged or needs cleaning, the whole mounting bracket 101 can be detached from the mounting platform 200 to ensure normal use and cleanliness of the cutter.

Further, referring to FIG. 4, in some embodiments, the first assembly 102 includes a first member 1021 and multiple first cutters 1022. The first cutters 1022 are mounted on the first member 1021, a first clamping structure 105 is formed on the first member 1021.

In this way, the first cutters 1022 may be mounted on the mounting bracket 101 through the first member 1021, and the mounting bracket 101 is then mounted on the mounting platform 200, so as to complete assembling of the cutter module 100, thus achieving a power connection between the cutter module 100 and the first transmission mechanism 427 through the first clamping structure 105.

Further, referring to FIG. 4, in some embodiments, the second assembly 103 includes a second member 1031 and multiple second cutters 1032. The second cutters 1032 are mounted on the second member 1031, and a second clamping structure 106 is formed on the second member 1031.

In this way, the second cutters 1032 may be mounted on the mounting bracket 101 through the second member 1031, and the mounting bracket 101 is then mounted on the mounting platform 200, so as to complete the assembling of the cutter module 100, thus achieving a power connection between the cutter module 100 and the second transmission mechanism 428 through the second clamping structure 106.

Specifically, the mounting bracket 101 may be made of a metal material to ensure that the mounting bracket 101 has a relatively good strength for carrying the first assembly 102 and the second assembly 103. The mounting bracket 101 may be substantially in a shape of a rectangular frame. A housing space 1011 is formed in the mounting bracket 101, and the first cutters 1022 and the second cutters 1032 are partially housed in the housing space 1011.

It should be noted that, referring to FIG. 5, when both the first assembly 102 and the second assembly 103 are mounted on the mounting bracket 101, the first assembly 102 and the second assembly 103 are disposed at an interval along a height direction of the mounting bracket 101 to avoid damaging blade edge sides 11 of the first cutters 1022 or the second

cutters 1032.

The blade edge sides 11 of the first cutters 1022 or the second cutters 1032 face the blade back sides 12 of the second cutters 1032 or the first cutters 1022, that is, the blade edge sides 11 of the first cutters 1022 and the second cutters 1032 face the same side, so that both the first cutters 1022 and the second cutters 1032 may cut a material.

Referring to FIG. 3 and FIG. 6, in some embodiments, the first transmission mechanism 427 includes a connecting rod 4273. The connecting rod 4273 includes a rod body 4274 and a clamping block 4275 located at an end of the rod body 4274. The first clamping structure 105 has a first open slot 1051 and a first clamping slot 1012 communicated with the first open slot 1051. An opening of the first open slot 1051 faces upward, the rod body 4274 penetrates into the first open slot 1051, and the clamping block 4275 is clamped in the first clamping slot 1012.

In this way, the rod body 4274 penetrates into the first open slot 1051, and the clamping block 4275 is clamped in the first clamping slot 1012, so that the connecting rod 4273 is connected to the first clamping structure 105, and the first transmission mechanism 427 can drive the first cutters 1022 to move, thus achieving cutting the material.

Further, Referring to FIG. 4 and FIG. 6, in some embodiments, the first transmission mechanism 427 includes a connecting rod 4273, the connecting rod 4273 includes a rod body 4274 and a clamping block 4275 located at an end of the rod body 4274. The second clamping structure 106 has a second open slot 1061 and a second clamping slot 1013 communicated with the second open slot 1061. An opening of the second open slot 1061 faces upward, the rod body 4274 penetrates into the second open slot 1061, and the clamping block 4275 is clamped in the second clamping slot 1013.

In this way, the rod body 4274 penetrates into the second open slot 1061, and the clamping block 4275 is clamped in the second clamping slot 1013, so that the connecting rod 4273 is connected to the second clamping structure 106, and the first transmission mechanism 427 can drive the second cutters 1032 to move, thus achieving cutting the material.

Specifically, the first transmission mechanism 427 includes a first rotating shaft 4271, an eccentric wheel 4272, and the connecting rod 4273. The first rotating shaft 4271 is dynamically coupled to the motor 41, the eccentric wheel 4272 is disposed on the first rotating shaft 4271,

the connecting rod 4273 is eccentrically connected to the eccentric wheel 4272, and the first rotating shaft 4271 drives the connecting rod 4273 to reciprocate by the eccentric wheel 4272, thereby causing the first cutters 1022 and the second cutters 1032 to reciprocate. Two ends of the mounting bracket 101 are provided with the first clamping slots 1012 along the second direction B, the blade back sides 12 of the first cutters 1022 may be partially clamped in the first clamping slots, so that the first cutters 1022 are partially housed in the housing space 1011. The quantity of first clamping slots 1012 of the mounting bracket 101 may be plural, and the multiple first clamping slots 1012 are disposed at intervals along the first direction A to be fitted with the multiple first cutters 1022.

Likewise, two ends of the mounting bracket 101 are provided with the second clamping slots 1013 along the first direction A, the blade back sides 12 of the second cutters 1032 may be partially clamped in the second clamping slots 1013, so that the second cutters 1032 are partially housed in the housing space 1011. The quantity of the second clamping slots 1013 of the mounting bracket 101 may be plural, and the multiple second clamping slots 1013 are disposed at intervals along the second direction B to be fitted with the multiple second cutters 1032.

Referring to FIG. 3 and FIG. 4, in some embodiments, a limiting post 107 is disposed on the mounting platform 200, a limiting hole 1071 is disposed on the mounting bracket 101, and the limiting post 107 is inserted in the limiting hole 1071 to limit the position of the mounting bracket 101.

In this way, the mounting bracket 101 may be mounted on the mounting platform 200 through the fitted connection between the limiting post 107 and the limiting hole 1071, thereby ensuring that the material can be accurately dropped onto the cutter module 100 from the discharge channel, thereby facilitating the first cutters 1022 and the second cutters 1032 to cut the material subsequently.

Further, referring to FIG. 4 and FIG. 7, in some embodiments, the dicing machine 1000 includes a locking assembly 60. The locking assembly 60 includes a first locking member 61 and a second locking member 62. The first locking member 61 is disposed on the mounting platform 200, and the second locking member 62 is disposed on the mounting bracket 101. The

first locking member 61 and the second locking member 62 automatically lock the cutter module 100 to the mounting platform 200 when the cutter module 100 is mounted to the mounting platform 200.

In this way, the positioning connection between the mounting bracket 101 and the mounting platform 200 can be achieved by the fitted connection between the limiting post 107 and the limiting hole 1071, and then the locking between the mounting bracket 101 and the mounting platform 200 can be realized by fitting the first locking member 61 with the second locking member 62, so as to ensure accurate positions of different elements.

Referring to FIG. 2, in some embodiments, the mounting platform 200 is provided with a discharge port 201 and the cutter module 100 is disposed above the discharge port 201.

In this way, the material is cut by the blade edges of the blade teeth and the grooves through reciprocating the first cutters 1022 and the second cutters 1032 along the second direction B and the first direction A, so as to ensure the material may be completely cut. After the material is cut by the first cutters 1022 and the second cutters 1032 of the cutter module 100, the material, under the action of gravity, may drop from the discharge port 201 below the first cutters 1022 and the second cutters 1032, which facilitates storage of the material in time and further processing on the material.

Specifically, the blade edge sides 11 of the first cutters 1022 and the second cutters 1032 both face away from the discharge port 201, so that the material cut by the first cutters 1022 and the second cutters 1032 can fall to the discharge port 201. When the material falls onto the cutter module 100, it may be cut by the blade edges of the first cutter 1022 and the second cutter 1032.

Referring to FIG. 2 and FIG. 3, in some embodiments, the driving mechanism 400 further includes a motor 41 and a second transmission mechanism 428. The dicing machine 1000 includes a cutter disk 300, and the cutter disk 300 is disposed below the discharge port 201. The second transmission mechanism 428 connects the cutter disk 300 and the motor 41. The motor 41 is used for driving the cutter disk 300 to rotate around the vertical direction by the second transmission mechanism 428. The motor 41 is also used for driving the first assembly 102 and the second assembly 103 to reciprocate by the two first transmission mechanisms 427.

In this way, the motor 41 and the second transmission mechanism 428 may drive the cutter disk 300 to rotate to further cut the material. The cutting tool 1002 and the cutter disk 300 are respectively located at opposite sides of the discharge port 201 along a depth direction. The material may slip out of a discharge sleeve 52 and cut by the cutting tool 1002, and then cut by the cutter disk 300 after passing through the discharge port 201, thereby cutting the material into dices.

Specifically, the dicing machine 1000 may include a shell and part of the elements may be disposed inside the shell, so that the shell protects the elements from shocks and vibrations of external environment. For example, the driving mechanism 400 may be disposed inside the shell, the mounting platform 200 serves as a mounting platform disposed on the shell for mounting the cutting tool 1002 and the discharge sleeve 52, and the cutter disk 300 may be disposed inside the shell and at a position corresponding to the cutting tool 1002. That is, the cutter disk 300 and the cutting tool 1002 are respectively positioned at opposite sides of the discharge port 201, and the material may be further cut by the cutter disk 300 after being cut by the cutting tool 1002 and passing through the discharge port 201, thereby obtaining the material as dices with similar shapes.

In some embodiments, the dicing machine 1000 may further include a receive box 202, and the receive box 202 is disposed below the mounting platform 200, and the receive box 202 may be located below the discharge port 201. After the material is cut by the first cutters 1022 and the second cutters 1032 of the cutter module 100, the material, under the action of gravity, may fall into the discharge port from the first cutters 1022 and the second cutters 1032, and then be cut by the cutter disk 300 and finally fall into the receive box 202, which facilitates timely storage of the material so as to facilitate further processing on the material.

Referring to FIG. 8 to FIG. 10, the cutter disk 300 according to the embodiment of the present application is used for the dicing machine 1000. The cutter disk 300 includes a disk body 31 and a blade 32. The disk body 31 is formed with a sinking recess 311, the bottom surface of the sinking recess 311 is disposed with a boss 312, and the disk body 31 is provided with a via hole 313, and the via hole 313 penetrates through the disk body 31 along a thickness direction of the disk body 31 and communicates with the sinking recess 311. The blade 32 is

mounted on a surface of the boss 312 facing away from the bottom surface of the sinking recess 311, and a channel 314 through which the material passes is formed between the blade 32 and the via hole 313.

In the cutter disk 300 and the dicing machine 1000 according to an embodiment of the present application, the cutter disk 300 for the dicing machine 1000 includes a disk body 31 and a blade 32. A sinking recess 311 is formed in the disk body 31, a bottom surface of the sinking recess 311 is provided with a boss 312, and the disk body 31 is provided with a via hole 313. The via hole 313 penetrates through the disk body 31 along the thickness direction of the disk body 31 and communicates with the sinking recess 311. The blade 32 is mounted on a surface of the boss 312 facing away from the bottom surface of the sinking recess 311, and a channel 314 through which the material passes is formed between the blade 32 and the via hole 313. In this way, the material such as fruit may be dropped from the discharge port 201 to the position of blade 32, the bottom end of the material may be abutted in the sinking recess 311 for a short time, and the disk body 31 may drive the blade 32 to rotate and cut the material fallen into the sinking recess 311, so that the material such as fruit may be cut into dices, and the materials may also be ensured to have a same size, and then the dice-shaped materials enter the receive box 202 for loading the dice-shaped materials from the via hole 313.

Specifically, the dicing machine 1000 may dice fruits, vegetables and other materials to make the food have a better taste. The mounting platform 200 can support the elements while the cutter disk 300 and the like may be disposed inside the mounting platform 200, so that the mounting platform 200 may have the function of a shell and protect the elements from shocks and vibrations of the external environment.

Further, the blade 32 is mounted at a surface of the boss 312 facing away from the bottom surface of the sinking recess 311, so that the blade 32 is disposed at an interval from the bottom wall of the sinking recess 311, ensuring that the dicing machine 1000 can cut the material into dices with similar shapes and sizes. The sinking recess 311 formed on the disk body 31 can reduce the weight of the dicing machine 1000, in addition, the sinking recess 311 can receive the material sliding down from the discharge port 201, so as to avoid the material from directly entering the receive box 202 from the discharge port 201, and at the same time, the size of the

dice-shaped materials may be limited by a distance between the bottom wall of the sinking recess 311 and the blade 32.

In the embodiment of the present application, the dicing machine 1000 may further include another cutter module 100, the cutter module 100 may include first cutters 1022 and second cutters 1032, which may be perpendicularly placed at the discharge port 201 and may be reciprocated in the horizontal direction, thereby cutting the material into strips at the discharge port 201. The cutter disk 300 may be disposed below the cutter module 100, such that the material cut into strips may be cut into dices by the blade 32 of the cutter disk 300, and the dice-shaped materials may successively enter the receive box 202 through the channel 314 and the via hole 313.

Referring to FIG. 8, in some embodiments, the dicing machine 1000 includes a driving mechanism 400 for driving the cutter disk 300 to rotate.

In this way, the driving mechanism 400 may drive the cutter disk 300 to rotate by extending the transmission assembly 42 into the assembling hole 315, so that the disk body 31 can drive the blade 32 to rotate with respect to the mounting platform 200, and then the materials at the discharge port can be cut, thus achieving a function of material dicing.

Specifically, the driving mechanism 400 may include a motor 41 and a transmission assembly 42. The motor 41 may be connected to the transmission assembly 42 and control movement of the cutter module 100 and the cutter disk 300 with respect to the mounting platform 200 by the transmission assembly 42, thereby achieving the function of cutting the material into dices by the cutters and the blade 32. One motor 41 may control multiple cutters through the transmission assembly 42, thereby achieving a linkage of different cutters. At the same time, only one motor 41 is required to drive the cutters, so as to enable the structure of the dicing machine 1000 to be compact, thus an overall weight of the dicing machine 1000 is reduced, and the cost is reduced.

In addition, in the embodiment of the present application, materials of the first cutters 1022, the second cutters 1032 and the blade 32 are not limited. For example, the blade 32 may be made of stainless steel or ceramic to meet various requirements.

Referring to FIG. 11 and FIG. 12, in some embodiments, the blade 32 includes a blade

edge 321, a blade back 322, and a blade side surface 323 connected to the blade edge 321 and the blade back 322, the blade side surface 323 faces downward, the blade side surface 323 includes an inclined surface 3231 extending in a direction from the blade edge 321 towards the blade back 322 and inclined downward.

In this way, the material may fall down to the discharge port 201 and be cut by the blade edge 321 of the blade 32 at the discharge port 201, and the blade side surface 323 of the blade 32 may continuously press down part of the material which has been cut, thus ensuring smooth material descending, avoiding the problem of increasing the volume and weight of the dicing machine 1000 caused by adding an extra pushing mechanism to drive the material to descend, with better user experience.

Further referring to FIG. 11, in some embodiments, the blade edge 321 has an arcuate structure and the via hole 313 has an arcuate structure. In this way, a cutting effect of the arcuate blade edge 321 is better, so as to ensure that the material can be cut by the blade edge 321, and the material which has been cut can be dropped from the arcuate via hole 313 to the receive box 202 for loading the dice-shaped material. A shape of the blade edge 321 corresponds to a shape of the via hole 313, so that the material fallen into the sinking recess 311 falls into the receive box 202 through the via hole 313 immediately after being cut apart by the blade edge 321.

It may be understood that the disk body 31 is rotated to drive the blade 32 to rotate, so that the blade edge 321 may first cut the material after passing through the discharge port 201, and the material cut by the blade 32 may continue to move downward along the inclined surface 3231 and pass through the via hole 313 to enter the receive box 202. In an embodiment of the present application, the cutter disk 300 may be semicircular, the blade edge 321 is semicircular arc, and the via hole 313 also has an arcuate structure, so that the cut material can slide into the via hole 313 along the blade side surface 323, and uncut material can be abutted against the blade 32, preventing the uncut material from entering the receive box 202 through the via hole 313.

In some embodiments, the blade edge 321 may also be in shape of a semicircular arc, a 1/3 circular arc, a 1/4 circular arc and the like, as long as shapes of the via hole 313 and the

blade edge 321 are kept to be the same, which is not limited in the present application.

Referring to FIG. 13, in some embodiments, an projection of the blade edge 321 in the thickness direction of the cutter disk 300 is located in the via hole 313. In this way, after being cut by the blade edge 321, all the material in the sinking recess 311 may be directly dropped into the receive box 202 through the via hole 313, thereby preventing the material from remaining in the sinking recess 311 after being diced.

Referring to FIG. 13 and FIG. 14, in some embodiments, two via holes 313 are provided, the two via holes 313 are arranged symmetrically with respect to a center of the disk body 31, and each via hole 313 is provided with one blade 32 correspondingly.

In this way, the two blades 32 may be fitted with the two via holes 313, so that when the cutter disk 300 rotates, the two blades 32 may be driven to cut the material and the material may fall into the receive box 202 from the two via holes 313, thereby increasing a cutting frequency of the blade edges 321 of the cutter disk 300, ensuring that the material reaching the discharge port 201 can be quickly cut, and improving an efficiency of the material's descending and dicing.

Obviously, in the embodiment of the present application, quantities of the via hole(s) 313 and the blade(s) 32 are not limited, as long as the quantity of the via hole(s) 313 corresponds to the quantity of the blade(s) 32. For example, the quantities of the blades 32 and the via holes 313 may be both three, and the quantities of the blades 32 and the via holes 313 may also be both four, so as to meet different requirements.

Referring to FIG. 14, in some embodiments, the disk body 31 is provided with an assembling hole 315. The assembling hole 315 is located at the center of the disk body 31 that penetrates the disk body 31 along the thickness direction of the disk body 31.

In this way, the transmission assembly 42 may drive the cutter disk 300 to rotate by extending the rotating shaft 421 into the assembling hole 315, so that the disk body 31 can drive the blade 32 to rotate with respect to the mounting platform 200, and then the material at the discharge port can be cut to achieve dicing the material.

Further, referring to FIG. 14, in some embodiments, the disk body 31 is provided with a fastening hole 316 disposed at an interval from the assembling hole 315, and the fastening hole

316 penetrates the disk body 31 along the thickness direction of the disk body 31.

In this way, the fastening hole 316 is used for mounting other fastener on the disk body 31, so that the fastener can fasten the rotating shaft 421 of the transmission assembly 42 to the disk body 31. Therefore, when the transmission assembly 42 rotates, the transmission assembly 42 can drive the disk body 31 to rotate together.

Specifically, other fastener may be a fixed disk 318, a connection hole corresponding to the fastening hole 316 is formed in the fixed disk 318, and fastener such as screw or bolt may be extended into the connection hole and the fastening hole 316, so that the fixed disk 318 and the disk body 31 may be fixedly connected together. A shaft hole for connecting the rotating shaft 421 may be formed in the center of the fixed disk 318, and the rotating shaft 421 may extend into the assembling hole 315 and be connected to the shaft hole, so that when the rotating shaft 421 is driven by the motor 41 to rotate, the fixed disk 318 drives the disk body 31 to rotate, and the blade 32 can cut the material into dices.

Referring to FIG. 13 and FIG. 14, in some embodiments, the disk body 31 includes a back surface 317 opposite to the sinking recess 311, the back surface 317 is provided with a mounting slot 3171. A side surface of the mounting slot 3171 is communicated with the assembling hole 315, and the fastening hole 316 is communicated with the mounting slot 3171.

In this way, the rotating shaft 421 can be extended from a side where the sinking recess 311 of the disk body 31 is located to the mounting slot 3171, and be connected to the fixed disk 318. The fixed disk 318 is mounted in the mounting slot 3171, so that the rotating shaft 421 and the disk body 31 can be fastened together, so as to ensure that the rotating shaft 421 can drive the disk body 31 to rotate together, thereby achieving the function of cutting the material by the cutter disk 300.

Referring to FIG. 15, a driving mechanism 400 according to an embodiment of the present application includes a motor 41, a first driving pulley 421, a second driving pulley 422, a first driven pulley 423, a second driven pulley 424, a first conveyor belt 425, a second conveyor belt 426, a first transmission mechanism 427, and a second transmission mechanism 428. The first driving pulley 421 and the second driving pulley 422 are both mounted on an output shaft of the motor 41, the first driven pulley 423 is disposed at an interval from the first driving pulley 421,

and the second driven pulley 424 is disposed at an interval from the second driving pulley 422. The first conveyor belt 425 is wound around the first driving pulley 421 and the first driven pulley 423, and the second conveyor belt 426 is wound around the second driving pulley 422 and the second driven pulley 424. The first transmission mechanism 427 is connected to the first driven pulley 423, and the first transmission mechanism 427 is used for driving the cutting tool 1002 to reciprocate in the horizontal direction, the second transmission mechanism 428 is connected to the second driven pulley 424, and the second transmission mechanism 428 is used for driving the cutter disk 300 to rotate in the horizontal direction.

In the driving mechanism 400 and the dicing machine 1000 according to the embodiment of the present application, the dicing machine 1000 may drive different cutters to move synchronously in different ways by the driving mechanism 400, and then may cut materials such as fruits into dices. Multiple cutters are driven by a same motor 41, so that the entire driving mechanism 400 is compact in structure and occupies less space and is light in weight. Besides, the cutters are driven to move by the conveyor belts and the pulleys, so that distribution of cutter positions is more reasonable, which further reduces a volume of the dicing machine 1000, with a better user experience.

Specifically, the dicing machine 1000 may cut fruits, vegetables and other materials into dices to make the food have a better taste. The mounting platform 200 may support the cutting tool 1002. It may be understood that, in some embodiments, the dicing machine 1000 may further include one discharge sleeve 52, and the discharge sleeve 52 is disposed above the mounting platform 200 and the discharge port 201 is located directly below the discharge sleeve 52. In this way, material in the discharge sleeve 52 may slip from the discharge sleeve 52 to the mounting platform 200 and be cut by the cutting tool 1002, and then slip from the discharge port 201 to the position of the cutter disk 300, and the cutter disk 300 may cut the material along the horizontal direction, thereby cutting the material into dices.

Referring to FIG. 15, in some embodiments, the dicing machine 1000 further includes a mounting platform 200, a cutting tool 1002, and a cutter disk 300. A carrier 203, the cutting tool 1002, and the cutter disk 300 are all mounted on the mounting platform 200. The mounting platform 200 is provided with a discharge port 201, and the cutting tool 1002 and the cutter disk

300 are both disposed corresponding to the discharge port 201.

In this way, the driving mechanism 400, such as the motor 41, may be mounted on the carrier 203, then the carrier 203, the cutting tool 1002 and the cutter disk 300 may be mounted on the mounting platform 200, so that the material can be cut after reaching the positions of the cutting tool 1002 and the cutter disk 300 from the discharge port 201.

Further, referring to FIG. 2, in some embodiments, the cutting tool 1002 and the cutter disk 300 are respectively positioned at opposite sides of the discharge port 201 along the depth direction.

In this way, the material may be cut by the cutting tool 1002 after slipping out of the discharge sleeve 52, and then cut by the cutter disk 300 after passing through the discharge port 201, thereby cutting the material into dices.

Specifically, the dicing machine 1000 may include a shell and part of the elements may be disposed inside the shell, so that the shell protects the elements from shocks and vibrations of the external environment. For example, the driving mechanism 400 may be disposed inside the shell, the mounting platform 200 serves as a mounting platform disposed on the shell for mounting the cutting tool 1002 and the discharge sleeve 52, and the cutter disk 300 may be disposed inside the shell and at a position corresponding to the cutting tool 1002. That is, the cutter disk 300 and the cutting tool 1002 are respectively positioned at opposite sides of the discharge port 201, and the material may be further cut by the cutter disk 300 after being cut by the cutting tool 1002 and passing through the discharge port 201, thereby obtaining the material as dices with similar shapes.

As an example, the cutting tool 1002 may include first cutters 1022 and second cutters 1032, and the first cutters 1022 and the second cutters 1032 may be disposed above the mounting platform 200, and the material may be cut by the first cutters 1022 and the second cutters 1032 along a first direction and a second direction when the material slips out of the discharge sleeve 52, and then cut into dices along the horizontal direction by the cutter disk 300. The driving mechanism 400 may be disposed at a side position of the mounting platform 200, so that the first transmission mechanism 427 and the second transmission mechanism 428 may extend onto the mounting platform 200, and the first cutters 1022 and the second cutters 1032

may be driven to reciprocate by the driving mechanism 400. The cutter disk 300 may be disposed below the mounting platform 200 and rotated by the second driving pulley 422, the second conveyor belt 426, the second driven pulley 424 and the second transmission mechanism 428.

In addition, the output shaft of the motor 41 may be connected to the first driving pulley 421 and the second driving pulley 422 at the same time. The first driving pulley 421 drives the first driven pulley 423 to rotate by the first conveyor belt 425, and the first driven pulley 423 may drive the cutting tool 1002 to move by the first transmission mechanism 427. The second driving pulley 422 drives the second driven pulley 424 to rotate by the second conveyor belt 426, and the second driven pulley 424 may drive the cutter disk 300 to rotate by the second transmission mechanism 428. In this way, one single motor 41 can be respectively connected to the cutting tool 1002 and the cutter disk 300 through a transmission mechanism 42, so that the single motor 41 can control different cutters to move synchronously in different ways, thereby cutting materials, such as fruits, into dices. Multiple cutters are driven by a same motor 41, so that the entire driving mechanism 400 is compact in structure and occupies less space and is light in weight. Besides, the cutters are driven to move by the conveyor belts and the pulleys, so that the distribution of cutter positions is more reasonable, thus further reducing the volume of the dicing machine 1000, with a better user experience.

Referring to FIG. 15, in some embodiments, the first driving pulley 421 is a gear, the first conveyor belt 425 is a synchronous belt, the second driving pulley 422 is a gear, and the second conveyor belt 426 is a synchronous belt.

In this way, the first driving pulley 421 and the second driving pulley 422 are gears, and the first conveyor belt 425 and the second conveyor belt 426 are synchronous belts, so that transmission can be carried out smoothly, and the motor 41 can drive different cutters to move synchronously by the transmission mechanism 42, thus improving an efficiency of dicing the material.

Specifically, inner circumferences of the synchronous belts are toothed, which can be meshed and matched with the gears to ensure stability of driving force transmission, and can also ensure that different cutting tools 1002 and the cutter disk 300 can move synchronously, so

as to avoid incomplete cutting of the material caused by asynchronous movement. In the embodiment of the present application, specific transmission types of the first driving pulley 421, the second driving pulley 422, the first conveyor belt 425 and the second conveyor belt 426 are not limited, for example, they may also be driven by screws and gears to meet various requirements.

In some embodiments, the first driving pulley 421 may be a gear, the first conveyor belt 425 may be a synchronous belt, while the second driving pulley 422 and the second conveyor belt 426 may be other means of transmission. In some other embodiments, the second driving pulley 422 is a gear and the second conveyor belt 426 is a synchronous belt, while the first driving pulley 421 and the first conveyor belt 425 may be other means of transmission. Thus, a variety of requirements are satisfied.

Referring to FIG. 15, in some embodiments, the quantity of the first driven pulleys 423 is two, and the two first driven pulleys 423 are disposed at an interval, the first conveyor belt 425 is wound around the first driving pulley 421 and the two first driven pulleys 423. Each first driven pulley is connected to one first transmission mechanism 427, one of the first transmission mechanisms 427 is used for driving a first cutting tool 1002 to reciprocate along the first direction, and the other first transmission mechanisms 427 is used for driving a second cutting tool 1002 to reciprocate along the second direction, and the first direction and the second direction are both horizontal and perpendicular to each other.

In this way, the motor 41 can drive the two first driven pulleys 423 to rotate synchronously by the first driving pulley 421 and the first conveyor belt 425, so that the first cutting tool 1002 and the second cutting tool 1002 can move synchronously, and movement directions of the first cutting tool 1002 and the second cutting tool 1002 are perpendicular to each other, so that the material can be cut vertically into strips.

It may be understood that the cutting tool 1002 according to the embodiment of the present application may include multiple first cutters 1022 and multiple second cutters 1032. The multiple first cutters 1022 are disposed at intervals along the first direction for reciprocating along the second direction, the first direction is perpendicular to the second direction, and the first direction and the second direction are horizontal. The multiple second

cutters 1032 are disposed at intervals along the second direction, the second cutters 1032 are used for reciprocating along the first direction, and the first cutters 1022 and the second cutters 1032 are arranged in an up-down direction along the depth direction. Therefore, the first conveyor belt 425 is wound around the first driving pulley 421 and the two first driven pulleys 423, so that the motor 41 can drive the two first driven pulleys 423 to rotate by the first driving pulley 421, so as to control the two first transmission mechanisms 427 to drive the first cutters 1022 and the second cutters 1032 to move synchronously.

Referring to FIG. 15, in some embodiments, the second driven pulley 424 is located between the two first driven pulleys 423. In this way, the two first driven pulleys 423 and the second driven pulley 424 can contribute to a better space allocation, so that the entire driving mechanism 400 has a compact structure and the driving mechanism 400 is prevented from occupying too much space and affecting the distribution arrangement of other elements of the dicing machine 1000.

Referring to FIG. 15, in some embodiments, the first transmission mechanism 427 includes a first rotating shaft 4271, an eccentric wheel 4272, and a connecting rod 4273. The first rotating shaft 4271 is connected to the first driven pulley 423, the eccentric wheel 4272 is disposed on the rotating shaft, and the connecting rod 4273 is eccentrically connected to the eccentric wheel 4272, and the first rotating shaft 4271 drives the connecting rod 4273 to reciprocate by the eccentric wheel 4272, thereby reciprocating the cutting tool 1002.

In this way, when the first driving pulley 421 and the first conveyor belt 425 drive the first driven pulleys 423 to rotate, the first rotating shafts 4271 can drive the eccentric wheels 4272 to rotate, and the eccentric wheels 4272 are eccentrically connected to the connecting rods 4273 to drive the connecting rods 4273 to reciprocate, thereby achieving the reciprocating motions of the first cutting tool 1002 and the second cutting tool 1002 along the first direction and the second direction respectively.

Specifically, when the first rotating shafts 4271 drive the eccentric wheels 4272 to rotate, since the connecting rods 4273 are eccentrically connected to the eccentric wheels 4272, the connecting rods 4273 are matched with the eccentric wheels 4272 to convert the rotation of the eccentric wheels 4272 into horizontal reciprocating motion, thereby driving the first cutters

1022 and the second cutters 1032 to implement a saw-like motion, so that the material can be cut more completely. In this way, the first cutters 1022 and the second cutters 1032 can cut the material into strips, and the strip-shaped material is cut into dices by the cutter disk 300 after passing through the discharge port 201.

Referring to FIG. 15, in some embodiments, the second transmission mechanism 428 includes a second transmission shaft 4281, one end of the second transmission shaft 4281 is connected to the second driven pulley 424, and the other end of the second transmission shaft 4281 is connected to the cutter disk 300.

In this way, when the second driving pulley 422 and the second conveyor belt 426 drive the second driven pulley 424 to rotate, the entire cutter disk 300 can be rotated by the second transmission shaft 4281, so that the motor 41 can simultaneously drive the cutting tool 1002 and the cutter disk 300 to move, so as to cut the material into dices.

Referring to FIG. 15, in some embodiments, the driving mechanism 400 further includes a tensioning wheel 43, the tensioning wheel 43 is disposed between the first driving pulley 421 and the first driven pulley 423, and the first conveyor belt 425 is also wound around the tensioning wheel 43 and configured for adjusting a tension force of the first conveyor belt 425.

In this way, the first conveyor belt 425 is wound around the tensioning wheel 43 so that the first conveyor belt 425 can be maintained in a tensioned state, and the first driving pulley 421 can drive the first driven pulley 423 to rotate by the first conveyor belt 425.

Referring to FIG. 16 to FIG. 18, an embodiment of the present application provides a push member 51 for the dicing machine 1000. The push member 51 includes a push rod 511 and a push head 512. The push head 512 is connected to one end of the push rod 511. A first slot 5124 and a second slot 5125 are formed in the push head 512, the first slot 5124 and the second slot 5125 are staggered, and both of the first slot 5124 and the second slot 5125 are recessed toward the push rod 511 from a side of the push head 512 away from the push rod 511.

In this way, the push rod 511 is pushed so that the push head 512 abuts against the material to be cut, so that the material moves towards the cutter module 100, and the cutter module 100 can cut the material. Meanwhile, the first slot 5124 and the second slot 5125 may be used for avoiding the cutters of the cutter module 100 and avoiding interference and

collision between the push member 51 and the cutter module 100.

Specifically, the push rod 511 may be a prismatic or cylindrical, which is not limited herein. The push rod 511 and the push head 512 may be made of metal or plastic material, and the push rod 511 and the push head 512 may be connected by welding, clamping or bonding. In some embodiments, the push rod 511 and the push head 512 may also be made in an integrally molded manner.

Referring to FIG. 16, FIG. 19, and FIG. 20, in some embodiments, the dicing machine 1000 may include a cutter module 100. The dicing machine 1000 includes a first cutter 1022 and a second cutter 1032 that are staggered in the up-down direction. The first cutter 1022 is capable of reciprocating in the first slot 5124 and the second cutter 1032 is capable of reciprocating in the second slot 5125 when the push member 51 is in a predetermined position.

In this way, when the push member 51 pushes the material to be cut onto the cutter module 100, the first cutter 1022 and the second cutter 1032 may be clamped in the first slot 5124 and the second slot 5125 respectively, so that the first cutter 1022 and the second cutter 1032 cut the material, the first cutter 1022 and the second cutter 1032 respectively reciprocate along the second direction B and the first direction A, so that multiple parts on the material can be completely cut, and the first cutter 1022 and the second cutter 1032 cooperate with each other to cut the material into blocks.

The cutter module 100 is located below the push member 51. The first slot 5124 is used for housing the first cutter 1022 to prevent the first cutter 1022 from contacting the push head 512, and the second slot 5125 is used for housing the second cutter 1032 to prevent the second cutter 1032 from contacting the push head 512.

Referring to FIG. 19 through FIG. 22, in some embodiments, each of the first cutter 1022 and the second cutter 1032 may be a cutter 10, and the cutter 10 may include a blade edge side 11 and a blade back side 12 opposite to the blade edge side 11. Multiple blade teeth 111 disposed at intervals are formed on the blade edge side 11, and an arcuate groove 112 is formed between two adjacent blade teeth 111. Blade edges 113 are formed at the edges of both the blade teeth 111 and the grooves 112, and the blade edges 113 are located at a middle part 5121 in a thickness direction of the cutter 10.

The cutter 10 may be made of a metal material, such as stainless steel or iron, or the cutter 10 may be made of a zirconia material, and the material of the cutter 10 is not limited herein.

Further, along the thickness direction of the cutter 10, a cross section of the blade edge side 11 may be approximately isosceles triangular shape, such that the blade edges 113 are located at the middle part 5121 in the thickness direction of the cutter 10. The blade edges 113 are relatively sharp, so as to penetrate the material and avoid a phenomenon that the material is not completely cut. The blade back side 12 may be substantially rectangular in shape, so that the blade back side 12 is mounted on the dicing machine 1000.

The blade teeth 111 of the cutter 10 penetrate the material, and the blade edges 113 on the blade teeth 111 and the grooves 112 cooperate to make the cutting effect better, and foods such as fruits and vegetables may be cut into dices, so as to make the food have a better taste. In the whole cutting process, the resistance when the cutter 10 enters the material is reduced, and a cutting efficiency and a cutting quality of the cutter 10 are improved.

The blade teeth 111 can easily penetrate the material, the blade edges 113 on the blade teeth 111 and the grooves 112 are cooperated to make the cutting effect better, and the blade edge 113 located at the middle part 5121 in the thickness direction of the cutter 10 makes the blade edge 113 bear uniform force when the cutter 10 effectively cuts the material, so that the blade edge 113 is not prone to breakage.

In some embodiments, multiple first cutters 1022 are disposed at intervals along the first direction A, the first cutters 1022 are used for reciprocating along the second direction B, the first direction A and the second direction B are perpendicular to each other, and the first direction A and the second direction B are horizontal. Multiple second cutters 1032 are disposed at intervals along the second direction B, the second cutters 1032 are used for reciprocating along the first direction A, and the first cutters 1022 and the second cutters 1032 are disposed along the up-down direction.

The first cutters 1022 and the second cutters 1032 respectively reciprocate along the second direction B and the first direction A, so that multiple parts on the material can all be cut. The first cutters 1022 and the second cutters 1032 cooperate with each other to cut the material into blocks.

Specifically, the multiple first cutters 1022 are disposed at intervals along the first direction A, and it can be ensured that multiple parts of the material can be cut by the first cutters 1022 along the first direction A when the material is placed on the first cutters 1022. At the same time, the multiple second cutters 1032 are disposed at intervals along the second direction B, and it can be ensured that multiple parts of the material can be cut by the second cutters 1032 along the second direction B when the material is placed on the second cutters 1032.

The blade teeth 111 on the first cutter 1022 are disposed at intervals along the second direction B on the blade edge side 11, so that the blade edge side 11 on the first cutter 1022 can cut the material when the first cutter 1022 reciprocates along the second direction B. Likewise, the blade teeth 111 on the second cutter 1032 are disposed at intervals on the blade edge side 11 along the first direction A, so that the blade edge side 11 on the second cutter 1032 can effectively cut the material when the second cutter 1032 moves along the first direction A.

The push rod 511 is pushed so that the push head 512 abuts against the material to be cut, so as to enable the material to move towards the cutter module 100. The blade edges 113 of the first cutter 1022 and the second cutter 1032 are both oriented towards the material. When the material is positioned on the cutter module 100, the push rod 511 is continuously pushed so that the material is cut by the first cutter 1022 and the second cutter 1032. The first cutter 1022 can reciprocate in the first slot 5124 and the second cutter 1032 can reciprocate in the second slot 5125 when the push member 51 is moved to a predetermined position, to completely cut the material.

In some embodiments, the dicing machine 1000 may further include a driving device connected to the cutter module 100, and the driving device may be used for controlling the first cutter 1022 and the second cutter 1032 to respectively reciprocate along the second direction B and the first direction A, so as to improve automation of the cutter module 100 and improve the cutting efficiency.

Referring to FIG. 16, FIG. 18, and FIG. 23, in some embodiments, the first slot 5124 is perpendicular to the second slot 5125. In this way, the first cutter 1022 and the second cutter 1032 of the cutter module 100 may be matched with the first slot 5124 and the second slot 5125

and arranged perpendicular to each other, so that the parts of the material in all directions may be cut by the first cutter 1022 and the second cutter 1032, and the material can be cut into blocks.

Referring to FIG. 18 and FIG. 23, in some embodiments, multiple first slots 5124 and multiple second slots 5125 are provided, the multiple first slots 5124 are disposed at intervals along the first direction A, and the multiple second slots 5125 are disposed at intervals along the second direction B, and the first direction A is perpendicular to the second direction B.

In this way, when the push rod 511 is pushed so that the push head 512 abuts against the material to be cut and the push head 512 is moved towards the cutter module 100, the first slots 5124 may be used for avoiding the first cutters 1022 of the cutter module 100 and the second slots 5125 may be used for avoiding the second cutters 1032 of the cutter module 100, thereby preventing the first cutters 1022 and the second cutters 1032 from cutting the push head 512, which results in damage to the push head 512 or dulling of the first cutters 1022 and the second cutters 1032.

Specifically, the quantity of the first slots 5124 and the quantity of the second slots 5125 may be 5, 6, 7, 8, or the like, which are not limited herein. The quantity of the first slots 5124 and the quantity of the second slots 5125 may be the same or different.

Multiple first cutters 1022 and multiple second cutters 1032 are provided. The multiple first cutters 1022 are disposed at intervals along the first direction A, and the first cutters 1022 can reciprocate along the second direction B. The multiple second cutters 1032 are disposed at intervals along the second direction B, the second cutters 1032 can reciprocate along the first direction A, and the first cutters 1022 and the second cutters 1032 are arranged along the up-down direction. When the push member 51 is moved to a predetermined position, the first cutters 1022 are capable of reciprocating in the first slots 5124 along the second direction B, and the second cutters 1032 are capable of reciprocating in the second slots 5125 along the first direction A, thus completely cutting the material.

It may be understood that the quantity of the first slots 5124 are in one-to-one correspondence with the quantity of the first cutters 1022, and the quantity of the second slots 5125 are in one-to-one correspondence with the quantity of the second cutters 1032.

In some embodiments, the first slots 5124 and the second slots 5125 have the same depth. In this way, cleaning of the first slots 5124 and the second slots 5125 of the push head 512 can be facilitated.

Referring to FIG. 18 and FIG. 23, in some embodiments, a cross-sectional profile of the push head 512 is rounded rectangular. In this way, the aesthetics of the push head 512 can be improved.

Referring to FIG. 18, in some embodiments, the push rod 511 is connected to a central member of the push head 512. In this way, it is possible to ensure that the push head 512 is not prone to be inclined when a user pushes the push rod 511.

Referring to FIG. 18, FIG. 23, and FIG. 24, in some embodiments, the push head 512 may include a substrate 5122 and multiple protruding posts 5123. The multiple protruding posts 5123 and the push rod 511 are respectively located at opposite sides of the substrate 5122, and the multiple protruding posts 5123 are disposed at intervals and define the first slots 5124 and the second slots 5125.

In this way, the protruding posts 5123 may be used to abut and hold the material, the push rod 511 is pushed so that the material approaches an end of the cutter module 100, and when the material is located above the cutter module 100, the push rod 511 may be continuously pressed so that the protruding posts 5123 are inserted into gaps 105 between the first cutters 1022 and the second cutters 1032, thereby completing the cutting of the material.

The substrate 5122 is connected to the push rod 511 and a shape of the substrate 5122 may be rectangular, triangular, circular or the like, which is not limited herein. Multiple protruding posts 5123 may be provided and the multiple protruding posts 5123 are disposed in an array on the substrate 5122 along the first direction A and the second direction B. The protruding post 5123 may be cylindrical, prismatic or in other irregular shapes. The shapes of the multiple protruding posts 5123 may be the same or different.

Referring to FIG. 16 and FIG. 25, in some embodiments, the dicing machine 1000 may include a mounting platform 200 for mounting the cutter module 100, and a mounting platform 200 disposed below the cutter module 100. The multiple first cutters 1022 and the multiple second cutters 1032 are staggered in the up-down direction, that is to say, on a projection of the

multiple first cutters 1022 and the multiple second cutters 1032 on the mounting platform 200, the multiple first cutters 1022 and the multiple second cutters 1032 may be in a grid shape, that is, the multiple first cutters 1022 and the multiple second cutters 1032 together form multiple gaps 105.

In an embodiment, the user pushes the push rod 511, so that the push head 512 abuts against the material to move the material onto the cutter module 100, the push rod 511 is continuously pushed so that the protruding posts 5123 extend into the gaps 105 formed by the first cutters 1022 and the second cutters 1032. The first cutters 1022 are capable of reciprocating in the first slots 5124, and the second cutters 1032 are capable of reciprocating in the second slots 5125, so that the material between the push head 512 and the cutter module 101 can be squeezed to be cut by the first cutters 1022 and the multiple second cutters 1032.

In an embodiment, the substrate 5122 is square, and the substrate 5122 is provided with multiple protruding posts 5123. Along a thickness direction of the substrate 5122, cross sections of the multiple protruding posts 5123 located at an edge of the substrate 5122 are all rectangular with same sizes, and cross sections of other protruding posts 5123 are all square with same sizes. Along the first direction A, intervals between the multiple protruding posts 5123 are kept to be the same, and along the second direction B, intervals between the multiple protruding posts 5123 are kept to be the same.

In some embodiments, the heights of all the protruding posts 5123 are maintained to be the same, so that a depth of the first slots 5124 and a depth of the second slots 5125 may be the same to facilitate cleaning of the first slots 5124 and the second slots 5125 by a user. Besides, the heights of all the protruding posts 5123 are maintained to be the same to ensure that all of the protruding posts 5123 can abut against the material, so that the material can be cut by the first cutters 1022 and the second cutters 1032.

Two adjacent protruding posts 5123 disposed at an interval along the first direction A may define a portion of a second slot 5125, and two adjacent protruding posts 5123 disposed at an interval along the second direction B may define a portion of a first slot 5124.

It should be noted that, along the first direction A, the intervals between the multiple protruding posts 5123 are kept to be the same, so that widths of the multiple second slots 5125

may be the same, and along the second direction B, the intervals between the multiple protruding posts 5123 are kept to be the same, so that widths of the multiple first slots 5124 are the same.

Referring to FIG. 16 through FIG. 18, a discharge assembly 500 provided by an embodiment of the present application includes a discharge sleeve 52 and the push member 51 as described in any of the above embodiments, and the push member 51 is movably inserted in the discharge sleeve 52.

In this way, when the material, such as fruit or vegetable, is stuck in the discharge sleeve 52, the material may be pushed out of the discharge sleeve 52 by pushing the push member 51, and the material may be pressed onto the cutter module 100 by the push head 512 of the push member 51 for cutting.

In particular, the discharge sleeve 52 is positioned above the cutter module 100 and may provide a channel for the material, such as fruit or vegetable, to move onto the cutter module 100. The discharge sleeve 52 may be made of a metal or plastic material, and an outer profile of the discharge sleeve 52 may be triangular prism, cylindrical, cuboid, and the like, which is not limited herein. It may be understood that the discharge sleeve 52 is hollow to enable movement of the push member 51 in the discharge sleeve 52.

In some embodiments, along an axial direction of the discharge sleeve 52, a cross-section of the discharge sleeve 52 is matched with a shape of a cross-section of the push head 512, so that the push head 512 can move stably in the discharge sleeve 52 along the axial direction of the discharge sleeve 52, avoiding shaking of the push head 512 along the first direction A or the second direction B, which may result in that the material cannot be accurately moved onto the cutter module 100.

Referring to FIG. 16 and FIG. 17, the dicing machine 1000 provided by the embodiment of the present application includes a mounting platform 200 and the discharge assembly 500 described in any of the above embodiments, and the discharge assembly 500 is disposed on the mounting platform 200.

In this way, the mounting platform 200 is used for mounting the cutter module 100, the discharge assembly 500 is positioned above the cutter module 100. When the material is placed

in the discharge sleeve 52, the material may fall to the cutter module 100 under the action of gravity. When the material, such as fruit or vegetable, is stuck in the discharge sleeve 52, the material may be pushed out of the discharge sleeve 52 by pushing the push member 51, and the push rod 511 may be pushed continuously, so that the push head 512 presses the material onto the cutter module 100 for cutting.

A process of cutting materials by the dicing machine 1000 is as follows: first, the push member 51 is taken out of the discharge sleeve 52, the material to be cut is put into the discharge sleeve 52, then the push member 51 is placed in the discharge sleeve 52, and the push head 512 is ensured to face the cutter module 100; under the action of gravity, the material may fall in the direction approaching the cutter module 100; when the material is positioned on the cutter module 100, the push rod 511 may be pushed to squeeze the material, and the material may be cut under a joint action of the push head 512, the first cutters 1022 and the second cutters 1032.

In a case where the push member 51 is located at a predetermined position, or, in a case where the protruding posts 5123 of the push head 512 extend into the gaps 105 formed by the first cutters 1022 and the second cutters 1032, the first cutters 1022 are housed in the first slots 5124, the second cutters 1032 are housed in the second slots 5125, the first cutters 1022 can reciprocate in the first slots 5124, and the second cutters 1032 can reciprocate in the second slots 5125, so that multiple parts on the material can all be completely cut, and the first cutters 1022 and the second cutters 1032 can cooperate with each other to cut the material into blocks.

It may be understood that when the material is stuck in the discharge sleeve 52, the push member 51 is placed in the discharge sleeve 52 and the push head 512 is ensured to face the cutter module 100, and the push rod 511 is pushed so that the push head 512 abuts against the material, and the material may be pushed to the cutter module 100 by continuously pushing the push rod 511, so as to prevent the material from blocking the discharge sleeve 52.

Referring to FIG.16, FIG. 17, and FIG. 26, in some embodiments, the dicing machine 1000 may further include a dicing assembly 600. The dicing assembly 600 includes a discharge sleeve 52 and a cutter module 100. The discharge sleeve 52 is provided with a first positioning structure 521 and the discharge sleeve 52 has a discharge channel 522. The cutter module 100 is

provided with a second positioning structure 104. The cutter module 100 includes first cutters 1022 and second cutters 1032 which are staggered. The blade edges 113 of the first cutters 1022 and the second cutters 1032 are both faced upwards. The first positioning structure 521 is fitted and connected to the second positioning structure 104, and the discharge channel 522 is located above the first cutters 1022 and the second cutters 1032.

In this way, the first positioning structure 521 and the second positioning structure 104 are fitted and connected to each other, so that the discharge sleeve 52 can be mounted on the cutter module 100, thereby ensuring that the material can accurately fall onto the cutter module 100 from the discharge channel 522, thus facilitating subsequent cutting of the material by the first cutters 1022 and the second cutters 1032.

Specifically, the first positioning structure 521 and the second positioning structure 104 not only serve as a connection between the discharge sleeve 52 and the cutter module 100, but also serve a positioning function for mounting the discharge sleeve 52 and the cutter module 100 to facilitate mounting by a user.

In some embodiments, the discharge channel 522 may be located directly above the first cutters 1022 and the second cutters 1032, so that material can more accurately fall from the discharge channel 522 onto the cutter module 100.

In some embodiments, the first positioning structure 521 may be a buckle or a clamping slot, the second positioning structure 104 may be a clamping slot or a buckle, and the first positioning structure 521 and the second positioning structure 104 may be fitted and connected to each other through a snap connection, so that the discharge sleeve 52 may be fixed above the cutter module 100. In an embodiment, one end of the discharge sleeve 52 close to the cutter module 100 is provided with multiple buckles, and the cutter module 100 is provided with multiple clamping slots. The multiple buckles and the multiple clamping slots are connected in one-to-one correspondence, so that the discharge sleeve 52 is fixed above the cutter module 100, and the material in the discharge channel 522 can accurately fall onto the cutter module 100 under the action of gravity.

In some embodiments, when the first positioning structure 521 is fitted and connected to the second positioning structure 104, there is an interval between the discharge sleeve 52 and

the cutter module 100 along the axial direction of the discharge sleeve 52 to facilitate the user to observe the cutting of the material by the cutter module 100. It should be noted that a height of the interval between the discharge sleeve 52 and the cutter module 100 is adjustable, and the interval between the discharge sleeve 52 and the cutter module 100 is controlled to be smaller than a height of the material, so as to prevent the material, such as strawberries, grapes and other materials with small volume, from slipping from the interval easily in a case that the interval is too large.

Referring to FIG. 26 and FIG. 27, in some embodiments, the discharge sleeve 52 includes a sleeve body 523 and a rim 524 connected to a lower edge of the sleeve body 523. A discharge channel 522 is formed in the sleeve body 523, the rim 524 is provided with the first positioning structure 521. In this way, the rim 524 may provide a position for mounting the first positioning structure 521, and the rim 524 may block juice generated when the cutter module 100 cuts a material such as fruit and prevent the juice from splashing.

Specifically, the sleeve body 523 and the rim 524 may be connected by welding, bonding or clamping, and the sleeve body 523 and the rim 524 may also be formed by integral molding, and connection manners between the sleeve body 523 and the rim 524 are not limited herein.

The rim 524 may be discoid, and the rim 524 may be circular, rectangular, triangular, or in other irregular shapes. It should be noted that the rim 524 is connected to the lower edge of the sleeve body 523, and a hole may be formed in the rim 524 to expose the discharge channel 522 of the sleeve body 523. In an embodiment, the sleeve body 523 is cylindrical, and the rim 524 is annular, and the rim 524 is sleeved at the lower edge of the sleeve body 523.

Referring to FIG. 26 and FIG. 27, in some embodiments, the first positioning structure 521 includes a positioning hole 5211 formed on the rim 524, and the positioning hole 5211 penetrates the rim 524. The second positioning structure 104 includes a positioning post 1041 disposed on the cutter module 100, and the positioning post 1041 passes through the positioning hole 5211.

In this way, the positioning post 1041 and the positioning hole 5211 are fitted and connected to each other, so that the discharge sleeve 52 can be mounted on the cutter module 100, thereby ensuring that the material can accurately fall onto the cutter module 100 from the

discharge channel 522.

In some embodiments, the first positioning structure 521 may include a positioning post disposed on the rim 524, and the second positioning structure 104 may include a positioning hole formed on the cutter module 100, and the positioning post on the rim 524 passes through the positioning hole 5211 on the cutter module 100.

Referring to FIG. 27, in some embodiments, at least two positioning holes 5211 are provided and the at least two positioning holes 5211 are disposed at an interval along a circumferential direction of the sleeve body 523.

In this way, the positioning posts 1041 on the cutter module 100 pass through the at least two positioning holes 5211 to complete the connection between the cutter module 100 and the discharge sleeve 52. The cooperation between the at least two positioning holes 5211 and the positioning posts 1041 may limit displacement of the discharge sleeve 52 and prevent the discharge sleeve 52 from rotating with respect to the cutter module 100, etc.

Specifically, the quantity of the positioning holes 5211 may be two, three, four, five, or the like, which is not limited herein. The quantity of the positioning posts 1041 is the same as the quantity of the positioning holes 5211.

Referring to FIG. 26 and FIG. 27, in some embodiments, two ends of the sleeve body 523 in the axial direction are provided with buffer rings 525 at their edges. In this way, the buffer rings 525 may prevent an end of the sleeve body 523 close to the cutter module 100 from bumping against the cutter module 100, and also prevent the user from accidentally bumping against the end of the sleeve body 523 away from the cutter module 100.

Specifically, the buffer ring 525 may be made of a material such as rubber or silica gel. Two buffer rings 525 may be provided and the two buffer rings 525 are sleeved at the two ends of the sleeve body 523 in the axial direction. The rim 524 is located at the end of the sleeve body 523 close to the cutter module 100, and the rim 524 is located above the buffer ring 525, and the buffer ring 525 may also prevent the rim 524 from falling off.

Referring to FIG. 19, FIG. 20, and FIG. 21, in some embodiments, the cutter module 100 includes a mounting bracket 101, a first assembly 102, and a second assembly 103. The first assembly 102 includes multiple first cutters 1022, and the second assembly 103 includes

multiple second cutters 1032. Both the first cutters 1022 and the second cutters 1032 pass through the mounting bracket 101, and the multiple first cutters 1022 are disposed at intervals along the first direction A, the first cutters 1022 are used for reciprocating along the second direction B. The first direction A is perpendicular to the second direction B, and the first direction A and the second direction B are horizontal directions. The multiple second cutters 1032 are disposed at intervals along the second direction B, and the second cutters 1032 are used for reciprocating along the first direction A. The first cutters 1022 and the second cutters 1032 are arranged along the up-down direction, and the second positioning structure 104 is disposed on the mounting bracket 101.

In this way, the first positioning structure 521 of the discharge sleeve 52 and the second positioning structure 104 on the mounting bracket 101 cooperate with each other, to ensure that the material can accurately fall into the cutter module 100 from the discharge channel 522, the first cutters 1022 and the second cutters 1032 respectively reciprocate along the second direction B and the first direction A, so that multiple parts on the material may be cut, and the material can be cut into blocks by the mutual cooperation between the first cutters 1022 and the second cutters 1032.

Specifically, the mounting bracket 101 may be made of a metal material to ensure that the mounting bracket 101 has a relatively good strength for carrying the first assembly 102 and the second assembly 103. The mounting bracket 101 may be substantially in a shape of a rectangular frame. A housing space 1011 is formed in the mounting bracket 101. The first cutters 1022 and the second cutters 1032 are partially housed in the housing space 1011.

Referring to FIG. 20 and FIG. 21, in some embodiments, each of the first cutters 1022 and the second cutters 1032 may be a cutter 10, and mounting holes 13 are formed on two ends of the cutter 10 along the longitudinal direction, and the mounting holes 13 are used for mounting the first cutters 1022 and the second cutters 1032.

The first cutters 1022 may be mounted on the first member 1021 through the mounting holes 13 on the first cutters 1022, and the second cutters 1032 may be mounted on the second member 1031 through the mounting holes 13 on the second cutters 1032. The housing space 1011 is formed in the mounting bracket 101, and both the first member 1021 and the second

member 1031 are connected to the mounting bracket 101, such that the first cutters 1022 and the second cutters 1032 are partially housed in the housing space 1011.

In addition, the first clamping slots 1012 are provided on two ends of the mounting bracket 101 along the second direction B, the blade back sides 12 of the first cutters 1022 may be partially clamped in the first clamping slots 1012, so that the first cutters 1022 are partially housed in the housing space 1011. Multiple first clamping slots 1012 of the mounting bracket 101 are provided, and the multiple first clamping slots 1012 are disposed at intervals along the first direction A to be fitted with the multiple first cutters 1022.

Likewise, second clamping slots 1013 are provided on two ends of the mounting bracket 101 along the first direction A, the blade back sides 12 of the second cutters 1032 may be partially clamped in the second clamping slots 1013, so that the second cutters 1032 are partially housed in the housing space 1011. Multiple second clamping slots 1013 of the mounting bracket 101 are provided, and the multiple second clamping slots 1013 are disposed at intervals along the second direction B to be fitted with the multiple second cutters 1032.

It should be noted that, when both the first assembly 102 and the second assembly 103 are mounted on the mounting bracket 101, the first assembly 102 and the second assembly 103 are disposed at an interval along a height direction of the mounting bracket 101 to avoid damaging the blade edge sides 11 of the first cutters 1022 or the second cutters 1032.

The blade edge sides 11 of the first cutters 1022 or the second cutters 1032 face the blade back sides 12 of the second cutters 1032 or the first cutters 1022, that is, the blade edge sides 11 of the first cutters 1022 and the second cutters 1032 face the same side, so that both the first cutters 1022 and the second cutters 1032 can cut the material.

Referring to FIG. 19 and FIG. 20, in some embodiments, the first assembly 102 further includes a first member 1021 mounted on the mounting bracket 101 by a first guide rod 1023, and the ends of the first cutters 1022 are mounted on the first member 1021. The second assembly 103 further includes a second member 1031 mounted on the mounting bracket 101 by a second guide rod 1033, and the ends of the second cutters 1032 are mounted on the second member 1031.

In this way, the first guide rod 1023 can drive the first cutters 1022 to reciprocate along

the second direction B with respect to the mounting bracket 101, and the second guide rod 1033 can drive the second cutters 1032 to reciprocate along the first direction A with respect to the mounting bracket 101.

Specifically, the first guide rod 1023 and the second guide rod 1033 may be made of metal or plastic, which is not limited herein. The first guide rod 1023 and the second guide rod 1033 may have a cylindrical shape. Two first guide rods 1023 may be provided, the two first guide rods 1023 are mounted at an interval at the two ends of the mounting bracket 101 along the first direction A, and the two first guide rods 1023 are both connected to the first member 1021, and the multiple first cutters 1022 are disposed on the first member 1021. Two second guide rods 1033 may be provided, the two second guide rods 1033 are mounted at an interval at two ends of the mounting bracket 101 along the second direction B, and the two second guide rods 1033 are both connected to the second member 1031, and the multiple second cutters 1032 are disposed on the second member 1031. The first guide rods 1023 and the second guide rods 1033 are staggered.

In some embodiments, two first guide grooves 1014 disposed at an interval are formed on the mounting bracket 101 along the first direction A, and two second guide grooves 1015 disposed at an interval are formed on the mounting bracket 101 along the second direction B, and the first guide grooves 1014 and the second guide grooves 1015 penetrate through the mounting bracket 101. The first guide rods 1023 pass through the first guide grooves 1014, and the second guide rods 1033 pass through the second guide grooves 1015, thereby reducing an overall size of the cutter module 100.

In this embodiment, the first guide grooves 1014 extend along the second direction B, the first guide rods 1023 are movably penetrated in the first guide grooves 1014, and the first guide rods 1023 can drive the first cutters 1022 to reciprocate with respect to the mounting bracket 101 along the second direction B. The second guide grooves 1015 extend along the first direction A, and the second guide rods 1033 are movably penetrated in the second guide grooves 1015. The second guide rods 1033 can drive the second cutters 1032 to reciprocate with respect to the mounting bracket 101 along the first direction A.

Referring to FIG. 16 and FIG. 21, in some embodiments, the dicing assembly 600 may

further include a push member 51, and the push member 51 is inserted in the discharge channel 522 and can move up and down with respect to the discharge sleeve 52.

In this way, when a material, such as fruit or vegetable, is stuck in the discharge sleeve 52, the material can be pushed out of the discharge channel 522 in the discharge sleeve 52 by pushing the push member 51, and the material can be squeezed by the push head 512 of the push member 51 in cooperation with the cutter module 100, so that the cutter module 100 can cut the material.

In some embodiments, the dicing machine 1000 may include a mounting platform 200 provided with a discharge port 201 and the dicing assembly 600 described in any of the above embodiments. The cutter module 100 is mounted on the mounting platform 200 and the cutter module 100 is disposed above the discharge port.

In this way, the discharge sleeve 52 is mounted on the cutter module 100 by mating and connecting the first positioning structure 521 of the dicing assembly 600 with the second positioning structure 104, so as to ensure that the material can accurately fall onto the cutter module 100 from the discharge channel 522, and then the material is cut by the cutter module 100 to ensure that the material can be completely cut, thus enabling a better cutting effect of the cutter module 100 on the material.

Referring to FIG. 16, FIG. 18, FIG. 27, and FIG. 28, an embodiment of the present application provides a discharge assembly 500 for a dicing machine 1000. The discharge assembly 500 includes a discharge sleeve 52 and a push member 51, the discharge sleeve 52 has a discharge channel 522, and a first guide structure 5221 is formed on the discharge channel 522. The push member 51 is inserted in the discharge channel 522 and can move up and down with respect to the discharge sleeve 52. A second guide structure 513 is formed on the push member 51, and the first guide structure 5221 is fitted and connected to the second guide structure 513.

In this way, with the cooperation between the first guide structure 5221 and the second guide structure 513, the push member 51 can accurately push the material onto the cutter module 100 so as to cut the material, while the push member 51 does not interfere with the cutter module 100.

Referring to FIG. 27 and FIG. 28, in some embodiments, the first guide structure 5221 may include a first arcuate surface 5222 formed at a corner of the discharge channel 522, and the second guide structure 513 may include a guide post 5131. The guide post 5131 has a second arcuate surface 5132, and the first arcuate surface 5222 cooperates with the second arcuate surface 5132.

In this way, when the push member 51 is inserted in the discharge channel 522 and the push member 51 moves with respect to the discharge sleeve 52, the first arcuate surface 5222 may be fitted with the second arcuate surface 5132, so that the push member 51 can be guided to move up and down stably and the shaking of the push member 51 along the first direction A or the second direction B can be avoided.

Specifically, when the user pushes the push member 51 to move the guide post 5131 downward with respect to the first arcuate surface 5222, the push member 51 may push the material in the discharge channel 522 onto the cutter module 100 to further cut the material. When the user pulls out the push member 51 to move the guide post 5131 upward with respect to the first arcuate surface 5222, the push member 51 may be removed from the discharge channel 522.

The first arcuate surface 5222 and the second arcuate surface 5132 may be 1/2 circular arcuate surface, 1/3 circular arcuate surface, 1/4 circular arcuate surface and the like, which is not limited herein.

Referring to FIG. 28, in some embodiments, the push member 51 may include a push rod 511 and a push head 512. The push head 512 is connected to one end of the push rod 511, and a guide post 5131 is disposed on the push head 512.

Specifically, the push rod 511 may be prismatic or cylindrical, which is not limited herein. The push rod 511 and the push head 512 may be made of a metal material or a plastic material. The push rod 511 and the push head 512 may be connected by welding, clamping or bonding. In some embodiments, the push rod 511 and the push head 512 may also be made in an integrally molded manner.

Referring to FIG. 18 and FIG. 24, in some embodiments, the push head 512 may include a substrate 5122 and multiple protruding posts 5123. The multiple protruding posts 5123 and the

push rod 511 are respectively located at opposite sides of the substrate 5122, and the multiple protruding posts 5123 are disposed at intervals and define the first slots 5124 and the second slots 5125.

In this way, the protruding posts 5123 may be used to abut against the material, the push rod 511 is pushed so that the material approaches an end of the cutter module 100, and when the material is on the cutter module 100, the push rod 511 may be continuously pressed so that the protruding posts 5123 are inserted into the gaps 105 between the first cutters 1022 and the second cutters 1032, thereby completing the cutting of the material.

In some embodiments, the guide post 5131 is located at a corner of the substrate 5122. In this way, the guide post 5131 can be matched with the first arcuate surface 5222 at the corner of the discharge channel 522, so that the second arcuate surface 5132 of the guide post 5131 can be more closely fitted to the first arcuate surface 5222.

Specifically, the guide post 5131 may be made of a metal material, and in an embodiment, the guide post 5131 may be made of a stainless steel material. In some embodiments, the guide post 5131 may also be made of plastic. The quantity of the guide post(s) 5131 may be one, two, three, four or the like.

The guide post 5131 and the protruding posts 5123 are together disposed on the substrate 5122 of the push head 512, and the guide post 5131 and the multiple protruding posts 5123 are disposed at intervals and define the first slots 5124 and the second slots 5125. In some embodiments, heights of the guide post 5131 and the multiple protruding posts 5123 may be kept the same, such that depths of the first slots 5124 and the second slots 5125 are the same to facilitate cleaning of the first slots 5124 and the second slots 5125 by a user. Besides, the heights of the guide post 5131 and the multiple protruding posts 5123 are all the same, and the guide post 5131 may abut against the material while the protruding posts 5123 abut against the material, and the guide post 5131 and the protruding posts 5123 jointly extrude the material onto the first cutters 1022 and the second cutters 1032, thus ensuring a better cutting effect of the material.

Referring to FIG. 16 and FIG. 17, a dicing machine 1000 provided by an embodiment of the present application may include a mounting platform 200, a cutter module 100, and a

discharge assembly 500 of any of the above embodiments. The cutter module 100 is mounted on the mounting platform 200 and is disposed above the discharge port 201. The discharge channel 522 is aligned with the discharge port 201 in the up-down direction.

In this way, through the cooperation between the first guide structure 5221 and the second guide structure 513, the push member 51 can accurately push the material onto the cutter module 100 to facilitate cutting the material, while the push member 51 does not interfere with the cutter module 100, and the discharge channel 522 is aligned with the discharge port 201 in the up-down direction, so that the material cut by the cutter module 100 can accurately fall into the discharge port.

Specifically, the blade edge sides 11 of the first cutters 1022 and the second cutters 1032 of the cutter module 100 are all faced away from the discharge port 201, so that material can be cut by the blade edges 113 of the first cutters 1022 and the second cutters 1032 when the material is on the cutter module 100.

Referring to FIG. 16 and FIG. 17, in some embodiments, the dicing machine 1000 may further include a receive box 202. The receive box 202 is disposed below the mounting platform 200, and the receive box 202 is aligned with the discharge port 201. After the material is cut by the first cutters 1022 and the second cutters 1032 of the cutter module 100, under the action of gravity, the material may fall into the receive box 202 from the discharge port 201 below the first cutters 1022 and the second cutters 1032, which facilitates timely storage of the material, so as to facilitate further processing on the material.

Referring to FIG. 21, in some embodiments, each of the first cutters 1022 and the second cutters 1032 may be a cutter 10. The cutter 10 may include a blade edge side 11 and a blade back side 12 facing away from the blade edge side 11. Multiple blade teeth 111 disposed at intervals are formed on the blade edge side 11, and an arcuate groove 112 is formed between two adjacent blade teeth 111, and the groove 112 on the cutter 10 may be in a shape of circular arc.

In this way, the groove 112 in a shape of circular arc bears the forces more uniformly in different moving directions than an irregular-shaped groove 112, so that the blade edge 113 on the groove 112 can ensure more uniform forces in different moving directions during cutting of

the material, so as to enable a more stable cutting process. Specifically, the groove 112 may be in s shape of a semicircular arc, a 1/3 circular arc, a 1/4 circular arc, or the like, which is not limited herein.

In some embodiments, each of the first cutters 1022 and the second cutters 1032 may be a cutter 10. The cutter 10 may include a blade edge side 11 and a blade back side 12 facing away from the blade edge side 11. Multiple blade teeth 111 disposed at intervals are formed on the blade edge side 11, an arcuate groove 112 is formed between two adjacent blade teeth 111, or the groove 112 between the two adjacent blade teeth 111 may be triangular.

Referring to FIG. 21 and FIG. 22, in some embodiments, a side of a blade tooth 111 facing away from the blade back side 12 is a tip. In this way, the tip may form the blade edge 113 at the blade tooth 111 to facilitate cutting the material.

A side of the groove 112 facing away from the blade back side 12 is also a tip, so that a blade edge 113 at the groove 112 may be formed to facilitate cutting material.

Referring to FIG. 21, in some embodiments, multiple blade teeth 111 are uniformly arranged at intervals. In this way, when the material is in contact with the blade edge side 11, the blade teeth 111 can be used for penetrating the material, and the multiple blade teeth 111 can ensure that multiple parts of the material can all be cut by the blade teeth 111, so that the cutter 10 has a better cutting effect on the material.

Specifically, multiple blade teeth 111 may be provided, such as 6, 7, 8, 9, 10, and the like, and the quantity of the blade teeth 111 is not limited herein. The blade edges 113 located at the blade teeth 111 can easily penetrate materials such as vegetables, fruits and the like.

Referring to FIG. 21 and FIG. 22, the cutter 10 for the dicing machine 1000 provided by the embodiment of the present application includes the blade edge side 11 and the blade back side 12 facing away from the blade edge side 11. Multiple blade teeth 111 disposed at intervals are formed on the blade edge side 11, and an arcuate groove 112 is formed between two adjacent blade teeth 111. The blade edges 113 is formed at the edges of both the blade teeth 111 and the groove 112, and the blade edges 113 are located at a middle part of the cutter 10 in the thickness direction.

In this way, the blade teeth 111 can easily penetrate the material, the blade edges 113 on

the blade teeth 111 and the groove 112 may cooperated to make the cutting effect better, and the blade edges 113 located in the middle part of the cutter 10 in the thickness direction make the blade edges 113 bear uniformly the force when the cutter 10 effectively cuts the material, so that the blade edges 113 are not prone to breakage.

Specifically, the cutter 10 may be made of a metal material, such as stainless steel or iron, or the cutter 10 may be made of a zirconia material, and the material of the cutter 10 is not limited herein.

Further, along the thickness direction of the cutter 10, a cross section of the blade edge side 11 may be approximately isosceles triangular shape, such that the blade edge 113 is located at the middle part in the thickness direction of the cutter 10. The blade edge 113 is relatively sharp, so as to penetrate the material and avoid a phenomenon that the material is not completely cut. The blade back side 12 may be substantially rectangular in shape, which facilitates mounting the blade back side 12 on the dicing machine 1000.

The blade teeth 111 of the cutter 10 are used to penetrate the material, and the blade edges 113 on the blade teeth 111 and the grooves 112 cooperate to make the cutting effect better, and food such as fruits and vegetables can be cut into dices, so as to make the food have a better taste. In the whole cutting process, the resistance when the cutter 10 enters the material is reduced, and the cutting efficiency and the cutting quality of the cutter 10 are improved.

In some embodiments, the material to be cut may be placed on a flat surface, and then the cutter 10 may be placed above the material, and the cutter 10 may be controlled to move towards the material so that the blade edge side 11 is in contact with a surface of the material to cut the material. The movement of the cutter 10 may be controlled by way of a common manual pressing or by a driving device.

In some embodiments, the cutter 10 is placed on a flat surface, and the material to be cut is placed on the blade edge side 11 of the cutter 10, and the material may be controlled to move towards the cutter 10 such that the surface of the material is in contact with the blade edge side 11 to cut the material. The material may be controlled to move towards the cutter 10 by a driving device, thereby ensuring safety of the cutting process.

Referring to FIG. 21, in some embodiments, the groove 112 is circular arcuate.

In this way, the groove 112 in a shape of circular arc bears the forces more uniformly in different moving directions than an irregular-shaped groove 112, so that the blade edge 113 on the groove 112 can ensure uniform forces in different moving directions during cutting of the material, so as to enable a more stable cutting process.

Specifically, the groove 112 may be in s shape of a semicircular arc, a 1/3 circular arc, a 1/4 circular arc, or the like, which is not limited herein.

In some embodiments, the groove 112 between two adjacent blade teeth 111 may also be triangular.

Referring to FIG. 21 and FIG. 22, in some embodiments, a side of the blade tooth 111 facing away from the blade back side 12 is a tip. In this way, the tip may form the blade edge 113 at the blade tooth 111 to facilitate cutting the material.

A side of the groove 112 facing away from the blade back side 12 is also a tip, so that the blade edge 113 at the groove 112 may be formed to facilitate cutting the material.

Referring to FIG. 21, in some embodiments, multiple blade teeth 111 are uniformly arranged at intervals. In this way, when the material is in contact with the blade edge side 11, the blade teeth 111 may be used for penetrating the material, and the multiple blade teeth 111 can ensure that multiple parts of the material can be cut by the blade teeth 111, so that the cutter 10 has a better cutting effect on the material.

Specifically, multiple blade teeth 111 may be provided, such as 6, 7, 8, 9, 10, and the like, and the quantity of the blade teeth 111 is not limited herein. The blade edges 113 located at the blade teeth 111 can easily penetrate materials such as vegetables, fruits and the like.

Referring to FIG. 21, in some embodiments, mounting holes 13 are formed on two ends of the cutter 10 in a length direction for mounting the cutter 10. In this way, the cutters 10 may be mounted on the dicing machine 1000 through the mounting holes 13, thereby preventing the cutters 10 from falling off during use.

Specifically, the dicing machine 1000 may be provided with mounting rods, and the cutters 10 are fixed to the mounting rods of the dicing machine 1000 through the mounting holes 13 located at the two ends of the cutters 10 in the length direction.

Referring to FIG. 19 and FIG. 21, the cutter module 100 provided by an embodiment of the present application includes multiple first cutters 1022 and multiple second cutters 1032. The multiple first cutters 1022 are disposed at intervals along the first direction A, and the first cutters 1022 are used for reciprocating along the second direction B. The first direction A is perpendicular to the second direction B, and the first direction A and the second direction B are horizontal.

The multiple second cutters 1032 are disposed at intervals along the second direction B, and the second cutters 1032 are used for reciprocating along the first direction A. The first cutters 1022 and the second cutters 1032 are arranged along the up-down direction, and the first cutters 1022 and/or the second cutters 1032 are the cutters 10 for the dicing machine 1000 as described in any of the above embodiments.

In this way, the first cutters 1022 and the second cutters 1032 respectively reciprocate along the second direction B and the first direction A, so that multiple parts on the material can be cut. The first cutters 1022 and the second cutters 1032 cooperate with each other to cut the material into blocks.

Specifically, the multiple first cutters 1022 are disposed at intervals along the first direction A, and it may be ensured that multiple parts of the material can be cut by the first cutters 1022 along the first direction A when the material is placed on the first cutters 1022. At the same time, the multiple second cutters 1032 are disposed at intervals along the second direction B, and it may be ensured that multiple parts of the material can be cut by the second cutters 1032 along the second direction B when the material is placed on the second cutters 1032.

The blade teeth 111 on a first cutter 1022 are disposed at intervals along the second direction B on the blade edge side 11, so that the blade edge side 11 on the first cutter 1022 can cut the material when the first cutter 1022 reciprocates along the second direction B. Likewise, the blade teeth 111 on a second cutter 1032 are disposed at intervals on the blade edge side 11 along the first direction A, so that the blade edge side 11 on the second cutter 1032 can effectively cut the material when the second cutter 1032 moves along the first direction A.

In some embodiments, the dicing machine 1000 may further include a driving device

connected to the cutter module 100, and the driving device may be used for controlling the first cutters 1022 and the second cutters 1032 to respectively reciprocate along the second direction B and the first direction A.

Referring to FIG.19 and FIG. 21, in some embodiments, the cutter module 100 may further include a mounting bracket 101, a first assembly 102, and a second assembly 103. The first assembly 102 includes a first member 1021 and multiple first cutters 1022. The first cutters 1022 are mounted on the first member 1021. The second assembly 103 includes a second member 1031 and multiple second cutters 1032. The second cutters 1032 are mounted on the second member 1031, and each of the first cutters 1022 and the second cutters 1032 passes through the mounting bracket 101.

In this way, the first cutters 1022 can be mounted on the mounting bracket 101 through the first member 1021, and the second cutters 1032 can be mounted on the mounting bracket 101 through the second member 1031, so as to complete assembling of the cutter module 100.

Specifically, the mounting bracket 101 may be made of a metal material to ensure that the mounting bracket 101 has a relatively good strength for carrying the first assembly 102 and the second assembly 103. The mounting bracket 101 may be substantially in a shape of a rectangular frame. A housing space 1011 is formed in the mounting bracket 101. The first cutters 1022 and the second cutters 1032 are partially housed in the housing space 1011.

The first cutters 1022 may be mounted on the first member 1021 through the mounting holes 13 on the first cutters 1022, and the second cutters 1032 may be mounted on the second member 1031 through the mounting holes 13 on the second cutters 1032. Both the first member 1021 and the second member 1031 are connected to the mounting bracket 101, such that the first cutters 1022 and the second cutters 1032 are partially housed in the housing space 1011.

Further, first clamping slots 1012 are provided on two ends of the mounting bracket 101 along the second direction B. The blade back sides 12 of the first cutters 1022 may be partially clamped in the first clamping slots 1012, so that the first cutters 1022 are partially housed in the housing space 1011. Multiple first clamping slots 1012 of the mounting bracket 101 may be provided, and the multiple first clamping slots 1012 are disposed at intervals along the first direction A to be fitted with the multiple first cutters 1022.

Likewise, second clamping slots 1013 are provided on two ends of the mounting bracket 101 along the first direction A. The blade back sides 12 of the second cutters 1032 may be partially clamped in the second clamping slots 1013, so that the second cutters 1032 are partially housed in the housing space 1011. Multiple second clamping slots 1013 of the mounting bracket 101 may be provided, and the multiple second clamping slots 1013 are disposed at intervals along the second direction B to be fitted with the multiple second cutters 1032.

It should be noted that, when both the first assembly 102 and the second assembly 103 are mounted on the mounting bracket 101, the first assembly 102 and the second assembly 103 are disposed at an interval along the height direction of the mounting bracket 101 to avoid damaging the blade edge sides 11 of the first cutters 1022 or the second cutters 1032.

The blade edge sides 11 of the first cutters 1022 or the second cutters 1032 face the blade back sides 12 of the second cutters 1032 or the first cutters 1022, that is, the blade edge sides 11 of the first cutters 1022 and the second cutters 1032 face the same side, so that both the first cutters 1022 and the second cutters 1032 can cut the material.

Referring to FIG. 1, FIG. 19 and FIG. 21, a dicing machine 1000 provided by an embodiment of the present application includes a mounting platform 200 and the cutter module 100 described in any of the above embodiments. The mounting platform 200 is provided with a discharge port 201. The cutter module 100 is mounted on the mounting platform 200 and both the first cutters 1022 and the second cutters 1032 are positioned above the discharge port 201.

In this way, the material is cut by the blade edges 113 of the blade teeth 111 and the grooves 112 by reciprocating motions of the first cutters 1022 and the second cutters 1032 along the second direction B and the first direction A respectively, so as to ensure that the material is completely cut. After the material is cut by the first cutters 1022 and the second cutters 1032 of the cutter module 100, the material, under the action of gravity, may fall out of the discharge port 201 below the first cutters 1022 and the second cutters 1032, which facilitates the timely storage of the material, so as to facilitate further processing on the material.

Specifically, the blade edge sides 11 of the first cutters 1022 and the second cutters 1032

all face away from the discharge port 201, so that the material cut by the first cutters 1022 and the second cutters 1032 can fall to the discharge port 201. When the material falls onto the cutter module 100, it can be cut by the blade edges 113 of the first cutters 1022 and the second cutters 1032.

In some embodiments, the dicing machine 1000 may further include a receive box 202. The receive box 202 is disposed below the mounting platform 200, and the receive box 202 may be located below the discharge port 201. After the material is cut by the first cutters 1022 and the second cutters 1032 of the cutter module 100, under the action of gravity, the material may fall into the discharge port 201 from the first cutters 1022 and the second cutters 1032 and then fall into the receive box 202, which facilitates timely storage of the material, so as to facilitate further processing on the material.

In the description of the embodiments of the present application, terms “first” and “second” are used for descriptive purposes only and cannot be understood as indicating or implying relative importance or implying the quantity of technical features indicated. Thus, features defined with “first”, “second” may explicitly or implicitly include one or more of said features. In the description of the embodiments of the present application, “a plurality of/multiple” means two or more, unless expressly defined otherwise.

In the description of the present specification, descriptions of the reference terms “an embodiment”, “some embodiments” , “illustrative embodiment”, “example”, “specific example” or “some examples” and the like mean that specific features, structures, materials, or characteristics described with reference to the embodiments or examples are included in at least one embodiment or example of the present application. In the present specification, schematic illustration of the above terms does not necessarily refer to the same embodiment or example. In addition, the specific features, structures, materials or characteristics described may be combined in any one or more embodiments or examples in a suitable manner.

Although the embodiments of the present application have been shown and described above, it may be understood that the above embodiments are exemplary and cannot be construed as limitation on the present application, and changes, modifications, substitutions and variations may be made to the above embodiments by those ordinarily skilled in the art within

the scope of the present application.

Claims:

1. A dicing machine, comprising:

a mounting platform provided with a discharge port;

a cutter module mounted on the mounting platform and located above the discharge port, wherein the cutter module comprises a first assembly and a second assembly, the first assembly is movable with respect to the mounting platform along a first direction, the second assembly is movable with respect to the mounting platform along a second direction, and the first direction is perpendicular to the second direction;

a cutter disk disposed below the discharge port and rotatable around a vertical direction; and

a driving mechanism comprising a motor, two first transmission mechanisms and one second transmission mechanism, wherein the motor is used for driving the first assembly and the second assembly to reciprocate by the two first transmission mechanisms, and for driving the cutter disk to rotate around the vertical direction by the second transmission mechanism.

2. The dicing machine according to claim 1, wherein the first assembly comprises a first member and a plurality of first cutters, the first cutters are mounted on the first member, and a first clamping structure is formed on the first member.

3. The dicing machine according to claim 1, wherein the second assembly comprises a second member and a plurality of second cutters, the second cutters are mounted on the second member, and a second clamping structure is formed on the second member.

4. The dicing machine according to claim 1, further comprising a discharge assembly, wherein the discharge assembly comprises a push member and a discharge sleeve, and the push member is movably inserted into the discharge sleeve.

5. The dicing machine according to claim 4, wherein the push member comprises a push rod and a push head, the push head is connected to one end of the push rod, first slots and second slots are formed in the push head, the first slots and the second slots are disposed in a staggered manner, and the first slots and the second slots are all recessed towards the push rod from a side of the push head away from the push rod.

6. The dicing machine according to claim 5, wherein the push head comprises a substrate and a plurality of protruding posts, the plurality of protruding posts and the push rod are respectively located at opposite sides of the substrate, and the plurality of protruding posts are disposed at intervals and define the first slots and the second slots.

7. The dicing machine according to claim 1, wherein the cutter module further comprises a cutter, the cutter comprises a blade edge side and a blade back side opposite to the blade edge side, a plurality of blade teeth disposed at intervals are formed on the blade edge side, an arcuate groove is formed between two adjacent blade teeth, blade edges are formed at edges of the blade teeth and the groove, and the blade edges are located at a middle part of the cutter in a thickness direction of the cutter.

8. The dicing machine according to claim 7, wherein the groove is in a shape of a circular arc.

9. The dicing machine according to claim 1, wherein the cutter disk comprises a disk body and a blade, a sinking recess is formed on the disk body, a bottom surface of the sinking recess is provided with a boss, the disk body is provided with a via hole, the via hole penetrates the disk body along a thickness direction of the disk body and communicates with the sinking recess, the blade is mounted on a surface of the boss facing away from the bottom surface of the sinking recess, and a channel for a material to pass through is formed between the blade and the via hole.

10. The dicing machine according to claim 9, wherein the blade comprises a blade edge, a blade back, and a blade side surface connecting the blade edge and the blade back, the blade side surface faces downward, the blade side surface comprises an inclined surface which extends in a direction from the blade edge towards the blade back and is inclined downward.