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(54) **ROTARY CUTTER**

ROTIERENDES SCHNEIDWERKZEUG
COUPEUSE ROTATIVE

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Description

[0001] This invention relates to a rotary cutter, such as is used to cut compressed tobacco leaf processed into strips (known as cheese) to produce cut rag (cut filler).

[0002] Blocks or bales of material, such as tobacco cheese, are commonly thinly cut by a rotary cutter. In the case of tobacco cheese, a baled compressed cut tobacco leaves, the product of such cutting is cut rag, which, after further processing steps, is transported to a cigarette maker to be formed into a wrapped tobacco rod. The conventional rotary cutter 10 shown schematically in Figure 1 consists of a cylindrical drum 12 rotatable about its principal axis, on the circumference of which are mounted a plurality of knives 14, usually eight, equidistant from one another (in Fig. 1 only two knives are shown). The knives are generally rectangular with a sharp blade 16 along one long edge. The knives are mounted in flats on the circumferential surface of the drum so that the blades lie proud of the surface and extend generally parallel to the principal axis of the drum. The blades are held in place on the drum by blade grippers 22. These are arcuate strips removably anchored to the circumferential surface of the drum adjacent the edge of the knife opposite the blade, extending over the upper surface of the knife and bearing on that surface adjacent the blade. Immediately adjacent the blade of the knife, a removable cavity bar 18 is mounted below the level of the circumferential surface of the drum. The cavity bar also extends generally parallel to the principal axis of the drum and defines a curved recess 20 in the drum surface.

[0003] To form the cheese, processed tobacco leaves 24 are introduced into the space between upper 26 and lower 28 belts or chains. The leaves are compressed by the belts or chains to form a coherent bale, the cheese 30. The cheese 30 passes between the upper 32 and lower 34 bars of the mouthpiece. The gap between the bars, which can be adjusted, determines the thickness of the cheese. The drum is rotated so that the blade impinges on the upper surface of the cheese 30, which is constantly advanced toward the drum by the upper 26 and lower 28 continuous belts or chains, to cut the slice. As the blade impinges on the cheese, it breaks a slice away from the front face of the cheese. The slice impinges on the curved surface of the recess 20 defined by the cavity bar 18, and is opened into strands of cut filler 36 which fall away from the drum. A grindstone (not shown) is disposed adjacent the circumferential surface of the drum to sharpen the blade, and a mechanism (not shown) is provided inside the drum adjacent each knife mounting flat to move the knife forward on the leaf to keep the leading edge 38 of the knife blade in the same position even though it is ground down by the grindstone.

[0004] The thickness of the slice, and thus the cut width of the rag, is determined by the speed with which the cheese is advanced toward the drum (typically

around 60mm/s), the angular speed of the drum (typically 500 rpm), and the number of blades on the drum. The first two may be adjusted to alter the cut width of the rag.

[0005] The knives, which are typically 1mm thick, usually have straight blades, which cut a single slice off the cheese. The strand length of the cut rag is determined by the size of the cut leaf making up the cheese. However, the knives may have generally transverse cutting edges along the blade, to determine maximum strand length. Such a knife, known as a controlled strand length knife, is disclosed in WO85/04616. The transverse cutting edge is preferably at least as deep as the cut width of the rag, so that the strands are completely cut. These knives are thicker than conventional knives, typically 3mm thick.

[0006] It will be understood that use of a controlled strand length knife does not mean that all the strands in the cut tobacco are of the same length. They may be shorter than the length to which the controlled strand knife cuts, because the piece of tobacco leaf which is cut is narrower than the cutting length of the controlled strand length knife. They may be longer, because the pieces of tobacco leaf may be folded when they are cut. Nevertheless, a significant proportion of the strands will be of length to which the knife cuts, and the average strand length will be determined by that length. The strand lengths to which the knife cuts is designated herein as the cut strand length.

[0007] Known drums will accommodate blades of only one thickness. Thus, if it is necessary to change from a conventional knife to a controlled strand length knife, the drum must also be changed, resulting in considerable down time while the change is made and the cutting geometry reset. Further, with conventional and controlled strand length knives, only one cut width can be provided at one time. Thus, if a blend of cut widths is required, more than one cutter is needed.

[0008] DE-A-27 19 088 discloses a tobacco blend comprising different kinds of tobacco, each of which is separately manufactured to a form and/or size appropriate to that tobacco. The tobaccos are then blended to give the final blend.

[0009] US-A-4 962 773 discloses cut tobacco filler having a cut width and a strand length within a specified range, which may be blended with expanded tobacco.

[0010] The invention provides a means by which these limitations are overcome.

[0011] According to the invention there is provided a rotary cutter for cutting a material comprising:

a drum rotatable about its principal axis;
a plurality of knives mounted on the circumferential surface of the drum, the blades of the knives being proud of the circumferential surface of the drum and extending parallel to the principal axis of the drum, characterised in that the angular spacing between the leading edges of the blades of one pair of adja-

cent knives is different from that between the leading edges of the blades of another pair of adjacent knives. The knives may all be of the same thickness, measured perpendicular to the surface in contact with the chain, or may be of two or more different thicknesses. Preferably the drum carries a plurality of cavity bars, each adjacent the blade of a respective knife.

[0012] The knives may be conventional knives, controlled strand length knives or some of each.

[0013] Shims may be provided between the drum or the gripper if present or both, and those knives which are thinner than the thickest knife on the drum or a gripper of appropriate size and shape for each thickness of blade may be provided. It is envisaged that in the case in which all the knives are conventional, with straight blades, shims will be provided between the knives and the drum.

[0014] It is desirable that the complete cutter be balanced. This can be readily achieved by ensuring that blades mounted diametrically opposite each other are identical. Alternatively, the shims, if used, can be weighted to ensure that the cutter is balanced.

[0015] It is desirable that the leading edges of the blades are all at the same radial distance from the axis of rotation of the drum, to enable a conventional grindstone to sharpen them. Conventional knife advance mechanisms may be employed to move the knives forward as they are ground.

[0016] In preferred embodiments of the invention, grippers are mounted on the circumferential surface of the drum, each gripper being associated with the position of a respective knife, which in use bear on the knives to hold them on the circumferential surface of the drum, and at least one shim is provided for insertion between one or more of the knives and the circumferential surface of the drum or the respective gripper.

[0017] There is also provided according to the invention a method of preparing a tobacco blend comprising cutting a single cheese of processed tobacco leaves to at least two different cut widths.

[0018] There is also provided according to the invention a method of preparing a tobacco blend comprising cutting a single cheese of processed tobacco leaves to at least two different cut strand lengths.

[0019] There is also provided according to the invention a tobacco blend comprising blend components of at least two different cut widths the composition of each of the said components is the same as the overall composition of the blend.

[0020] There is also provided according to the invention a tobacco blend comprising blend components of at least two different cut strand lengths the composition of each of the said components is the same as the overall composition of the blend.

[0021] There is also provided according to the invention a smoking article comprising a wrapped rod com-

prising a tobacco blend according to the invention.

[0022] The invention will be further described by way of example with reference to Figures 2 to 6 of the drawings in which:

Figure 2 shows a diagrammatic section through a cutter according to an embodiment of the invention; Figure 3 shows side elevations of conventional knives of different thickness;

Figure 4 shows a controlled strand length knife; Figure 5 shows a detail of the embodiment of Figure 2; and

Figure 6 shows diagrammatically an alternative embodiment of the invention.

[0023] Figure 2 shows a rotary cutter 50 according to the invention. The general construction of the cutter is similar to that of the conventional rotary cutter shown in Figure 1; the knives 52, 52', 54, 54', 56, 56', 58, 58' are held in flats on the cylindrical surface of the rotatable cutter drum 60 by grippers. A grindstone and a knife advance mechanism are provided. The drum diameter is typically 560mm and the knife width (parallel to the drum axis) 400mm.

[0024] There are four pairs of knives mounted on the drum 60, each one of a pair being identical and diametrically opposite the other one of the pair. The first 52,52' and third 56,56' are conventional straight bladed knives of different thicknesses and the second 54,54' and fourth 58,58' pairs are controlled strand length knives of the type shown in Figure 5.

[0025] In the case of straight bladed knives, it is clearly desirable that the outer surface of a knife (when mounted on the drum 60) be of standard length (measured from the blade to the opposite edge of the knife), so that the gripper bears on the region of the upper surface immediately adjacent the blade. As shown in Figure 3, this means that the inner surface of the knife will be longer the thicker the knife is for a constant blade angle ϕ , usually 30° . This angle is maintained by the grindstone. Figure 3 shows three knives; a thick knife 62a, a standard knife 62b and a thin knife 62c. It is readily apparent that, although the outer surfaces 64a,b,c of the knives are of the same length as each other, the inner surface 66a of the thick knife 62a is longer than that 66b of the standard knife 62b, which is longer than that 66c of the thin knife 62c. The effect of this is to alter the angular spacing between the leading edges 68a,b of adjacent knives 62a,b of different thicknesses mounted on a drum 60 compared to the angular spacing of the leading edges of the two adjacent knives of the same thickness. As can be seen in Figure 5, it is the leading edge of the blade which initiates the cut into the cheese. It will be readily appreciated that for a given angular speed of the drum and a given speed of advance of the cheese, a difference in angular spacing between adjacent pairs of knives will lead to a difference in the width of the slice taken from the cheese and hence in the cut

rag width. If three adjacent knives are of two (or three) different thicknesses, the angular spacing between the leading edges of the blades of the two adjacent pairs will be different and two different cut widths of rag will be provided without any change in the operation of the cutter or the advancing of the cheese.

[0026] One or more of the knives mounted on the drum 60 of the rotary cutter 50 may be a controlled strand length knife, for example of the type shown in Figure 4. The controlled strand length knife 80 of Figure 4 is overall of greater thickness than a standard cutter knife. Flat depressions 82 extend across one face of the knife from the blade 84 to the opposite edge. The portions of the knife 80 forming these depressions is typically of standard knife thickness. The depressions are in the underside 84 of the knife 80, when it is mounted on the drum, which provides the leading edge 86 of the blade 88. The depressions are separated by ridges 90 of inverted 'V' section, which are of the full thickness of the knife 80. At each end of the knife 80 are regions 92 without depressions, for ease of mounting of the knife on the drum. Since the angle of the blade 88 is constant across the thickness of the knife, the leading edge of the blade on the thicker end regions 92 and the ridges 90 extends beyond that on the depressions 82. Since the knife 80 is usually longer (400mm) than the cheese is wide, the thicker end regions 92 do not normally cut the cheese. The ridges 90 impinges first upon the cheese, breaking it vertically, followed by the cutting edge on the depressions 82, which cut a slice from it. The overall thickness of the controlled strand length knife 80 is normally chosen so that the depth of the vertical breaks in the cheese made by the ridges 90 is at least as great as the cut width, determined by blade spacing, drum angular speed and cheese advance speed.

[0027] The vertical breaks made by the ridges 90 determine the maximum strand length of the cut rag. This is equal to the spacing S between the ridge peaks. Controlled strand length knives giving different maximum strand lengths may be used on the same drum, and a single knife may have unevenly spaced ridges to give different strand lengths.

[0028] The cutter 50 shown in Figure 2 provides cut rag of four different cut widths and two different strand lengths. The spacings between adjacent pairs of knives is chosen to provide the required cut widths, bearing in mind the intended speed of rotation of the drum and the speed of advance of the tobacco cheese. Three will normally be two pairs of knives providing each cut width, opposite each other on the drum surface. The weight of tobacco cut to a particular width will be in the same proportion to the total weight cut as the proportion of the cut width to the length of cheese cut during a complete rotation of the drum. (If there is more than one pair of knives cutting to a particular width, the proportion of that width produced will be accordingly greater).

[0029] It has already been mentioned that it is preferred that shims or different grippers should be

employed to take account of the different thickness of knife used in the drum. If knives of different thickness are employed to vary cut width, rather than only to control maximum strand length, it is desirable that the shims be between the drum and the knife, so that the position of the leading edge of adjacent knives is different from knife to knife. In order to ensure that the cavity defined by the cavity bar is in the correct position relative to the leading edge of the knife, a differently shaped cavity bar is employed with each different thickness of knife; the cavity bar is changed when the knife is changed for one of different thickness.

[0030] Figure 5 shows a portion of the rotary cutter 50 of the type shown in Figure 2. A knife 62 is mounted in a flat 102 on the drum 60 of the cutter. The knife has a blade 70 with a leading edge 68. Immediately in front of the blade is a recess in the drum surface in which a removable cavity bar 104 is located, defining a cavity 20 adjacent the blade. The knife 62 is relatively thin, and a shim 106 lies between the knife and the surface flat 102 on the drum. The shim 106 stops short of the leading edge 68 of the knife blade 70, so that the cavity bar 104 can lie adjacent the blade 70 of the knife 62, stopping just short of the leading edge 68 of the blade. The leading edge of the shim 106 is shaped to conform to the trailing surface of the cavity bar 104. A gripper 108 is removably attached to the drum surface behind the flat 102, and extends over the knife 62 to bear on its upper surface 64 adjacent the blade 70.

[0031] If the knife 62 is replaced by a knife of different thickness, the shim 106 can be dispensed with, a further shim added or replaced with a thicker shim. The gripper 108 can be replaced with one designed to bear the on a thinner or thicker knife, or a shim can be placed between the upper surface 64 of the knife and the gripper, either instead of or in addition to the shim 106 between the knife and the flat 102. If the angular position of the leading edge 68 of the knife blade 70 changes, the cavity bar 104 can be replaced with one of different thickness so that the cavity 20 is still immediately in front of the leading edge.

[0032] In use, the drum 60 rotates so that the leading edge 68 of the knife blade 70 impinges on the tobacco cheese 30 which is advanced between the upper 32 and lower 34 bars of the mouthpiece toward the rotary cutter by upper 26 and lower 28 continuous belts or chains. The leading edge slices through the cheese generally vertically, and the cut slice impinges on the curved surface of the cavity 20 defined by the cavity bar 104 to open up the slice into strands 36, which are conveyed to a cigarette maker.

[0033] The invention provides a rotary cutter which can provide different cut widths of rag at the same time using knives of the same thickness. The knives are mounted on the drums at uneven circumferential spacings, thus providing different angular spacings between the leading edges of the blades of adjacent pairs of knives. Each distinct angular spacing will give a distinct

cut width of rag. In order to ensure that the blades of the knives impinge on the grindstone correctly, those knives which have leading edges which trail compared to the foremost leading edge in the direction of rotation of the drum are raised above the circumferential surface of the drum by one or more shims so that the radial distance of the leading edges of the knife blades is the same. The height by which a knife is raised is proportional to the amount by which its leading edge trails the foremost leading edge.

[0034] Different angular spacings between the leading edges of the blades of pairs of adjacent knives can be provided by varying the angle at which the knife lies relative to a radius of the cutter drum. This is shown diagrammatically in Figure 6.

[0035] As shown in Figure 6, a knife 662 is mounted, by means not shown, in a flat 102 on the surface of a cutter drum 60. The drum carries several such flats; the position of the leading edge of the preceding knife blade is shown at X.

[0036] In Figure 6A, the knife 662a is mounted in the flat 102, and the leading edge 668a of the blade 670a is at angular spacing θ from the leading edge (X) of the preceding knife blade.

[0037] In Figure 6B, the knife 662b is angled upward in the flat, and is supported by a wedge shaped shim 108. The knife 662b of Figure 6B is shorter than the knife 662a of Figure 6A to maintain the radial distance of the leading edge 668b from the axis of rotation of the cutter drum 60. The angular spacing θ' between the knife blade leading edge 668b and that (X) of the preceding knife is smaller than the corresponding spacing θ in Figure 6A.

[0038] In Figure 6C, the knife 662c is angled downward in the flat, and is supported by a wedge shaped shim 108'. The knife 662c of Figure 6C is longer than the knife 662a of Figure 6A to maintain the radial distance of the leading edge 668c from the axis of rotation of the cutter drum 60. The angular spacing θ'' between the knife blade leading edge 668b and that (X) of the preceding knife is greater than the corresponding spacing θ in Figure 6A.

[0039] A cutter of the type shown in Figure 5 can be used with knives of the same thickness as each other but of different lengths to provide different angular spacings between adjacent leading edges, with all the leading edges at the same radial distance from the axis of rotation of the drum 60. A relatively long knife may be used mounted relatively deeply in the flat 102 on the drum surface (that is, relatively near the axis of rotation) to reduce the angular spacing between the leading edge of the knife blade and the preceding leading edge compared to a relatively short knife mounted relatively shallowly in the flat. The different mounting depths are achieved by using shims 106, and ensure that the radial distance of the leading edges remains constant.

[0040] The cut tobacco produced by rotary cutters according to the invention can be subjected to normal

primary processing or to special processing, such as expansion, before passing to a cigarette maker.

[0041] The present invention thus provides a rotary cutter which can carry a variety of thicknesses of knife blade. This enables changes of knife type, such as from straight blade knives to controlled strand length knives, to be made with a minimum of duplication of apparatus and a short down time. It also provides a rotary cutter which can provide cut rag of various widths, various strand lengths or both at the same time, with no alteration in drum speed, cheese advance speed or drum geometry.

[0042] Although the rotary cutter of the invention finds particular application in the cutting of tobacco cheese into art rag, it is envisaged that it will also be useful in other applications in which a bale or block is to be sliced.

Claims

1. A method of preparing a tobacco blend comprising cutting a single cheese of processed tobacco leaves to at least two different cut widths.
2. A method of preparing a tobacco blend comprising cutting a single cheese of processed tobacco leaves to at least two different cut strand lengths.
3. A method according to claim 1 or 2 in which the cutting to the different widths or lengths is by a single cutting operation.
4. A tobacco blend comprising blend components of at least two different cut widths in which the composition of each of the said components is the same as the overall composition of the blend.
5. A tobacco blend comprising blend components of at least two different cut strand lengths the composition of each of the said components is the same as the overall composition of the blend.
6. A blend according to claim 4 and 5.
7. A tobacco blend according to claim 4, 5 or 6 in which the said blend components are cut rag.
8. A tobacco blend according to any of claims 4 to 7 in which one of the said blend components is expanded tobacco.
9. A smoking article comprising a wrapped rod comprising a tobacco blend according to any of claims 4 to 8.
10. A rotary cutter for slicing a material comprising:

a drum (50) rotatable about its principal axis;

a plurality of knives (52,54,56,58,52',54',56',58') mounted on the circumferential surface of the drum, the blades of the knives being proud of the circumferential surface of the drum and extending parallel to the principal axis of the drum, characterised in that the angular spacing between the leading edges of the blades of one pair of adjacent knives is different from that between the leading edges of the blades of another pair of adjacent knives.

11. A rotary cutter according to claim 10 in which at least one knife and preferably at least two knives are of a different thickness, measured perpendicular to the surface in contact with the drum, to the other knives.
12. A rotary cutter according to any of claims 10 or 11 in which at least some of the knives are controlled strand length knives.
13. A rotary cutter according to any of claims 10, 11 or 12 in which a shim is located between the circumferential surface of the drum and at least one knife which is of smaller thickness than another knife.
14. A rotary cutter according to any of claims 10 to 13 in which a shim is located between a gripper which bears on the upper surface of a knife to hold it in position on the circumferential surface of the drum and one knife which is of smaller thickness than another knife.
15. A rotary cutter according to claim 13 or 14 in which the shim brings the thickness of the said one knife and the shim to the thickness of the thickest knife in the cutter.
16. A rotary cutter according to claim 13, 14 or 15 in which the shim brings the weight of the said one knife and the shim to the weight of the knife and shim if any diametrically opposite.
17. A rotary cutter according to any of claims 10 to 16 in which each knife is diametrically opposite an identical knife.
18. A rotary cutter according to any of claims 10 to 17 further comprising:

grippers mounted on the circumferential surface of the drum, each gripper being associated with the position of a respective knife, which in use bear on the knives to hold them on the circumferential surface of the drum; and at least one shim for insertion between one or more of the knives and the circumferential sur-

face of the drum or the respective gripper.

19. A rotary cutter according to any of claims 10 to 18 in which the leading edges of the knife blades are at the same radial distance from the axis of rotation of the drum.

Patentansprüche

1. Verfahren zur Herstellung einer Tabakmischung, umfassend das Schneiden eines einzelnen Käses aus verarbeiteten Tabakblättern auf wenigstens zwei verschiedene Schnittbreiten.
2. Verfahren zur Herstellung einer Tabakmischung, umfassend das Schneiden eines einzelnen Käses aus verarbeiteten Tabakblättern auf wenigstens zwei verschiedene Schnittlängen.
3. Verfahren nach Anspruch 1 oder 2, bei dem das Schneiden auf die verschiedenen Breiten oder Längen in einem einzelnen Schneidvorgang erfolgt.
4. Tabakmischung, umfassend Mischungskomponenten aus wenigstens zwei verschiedenen Schnittbreiten, wobei die Zusammensetzung von jeder der genannten Komponenten dieselbe ist wie die Zusammensetzung der Mischung insgesamt.
5. Tabakmischung, umfassend Mischungskomponenten aus wenigstens zwei verschiedenen Schnittlängen, wobei die Zusammensetzung von jeder der genannten Komponenten dieselbe ist wie die Zusammensetzung der Mischung insgesamt.
6. Mischung nach Anspruch 4 und 5.
7. Tabakmischung nach Anspruch 4, 5 oder 6, bei der die genannten Mischungskomponenten Schnittlappen sind.
8. Tabakmischung nach einem der Ansprüche 4 bis 7, bei der eine der genannten Mischungskomponenten ausgedehnter Tabak ist.
9. Rauchartikel, umfassend einen gerollten Strang, der eine Tabakmischung nach einem der Ansprüche 4 bis 8 enthält.
10. Drehschneidvorrichtung zum Schneiden eines Materials, umfassend:

eine um ihre Hauptachse rotierbare Walze (50);
eine Mehrzahl von Messern (52, 54, 56, 58, 52', 54', 56', 58'), die auf der Umfangsfläche der Walze montiert sind, wobei die Klingen der Messer von der Umfangsfläche der Walze vor-

stehen und parallel zur Hauptachse der Walze verlaufen, dadurch gekennzeichnet, daß sich der Winkelabstand zwischen den vorderen Kanten der Klingen eines Paares benachbarter Messer von dem zwischen den vorderen Kanten der Klingen eines anderen Paares benachbarter Messer unterscheidet.

11. Drehschneidvorrichtung nach Anspruch 10, bei der wenigstens ein Messer und vorzugsweise wenigstens zwei Messer senkrecht zu der die Walze berührenden Fläche gemessen eine andere Dicke als die anderen Messer hat/haben.

12. Drehschneidvorrichtung nach einem der Ansprüche 10 oder 11, bei der wenigstens einige der Messer gesteuerte Schnittlängmesser sind.

13. Drehschneidvorrichtung nach einem der Ansprüche 10, 11 oder 12, bei der ein Beipackblech zwischen der Umfangsfläche der Walze und wenigstens einem Messer liegt, das eine geringere Dicke als ein anderes Messer hat.

14. Drehschneidvorrichtung nach einem der Ansprüche 10 bis 13, bei der sich ein Beipackblech zwischen einem Greifer, der auf der Oberfläche eines Messers ruht, um es auf der Umfangsfläche der Walze in Position zu halten, und einem Messer befindet, das eine geringere Dicke als ein anderes Messer hat.

15. Drehschneidvorrichtung nach Anspruch 13 oder 14, bei der das Beipackblech die Dicke des genannten einen Messers und des Beipackbleches auf die Dicke des stärksten Messers in der Schneidvorrichtung bringt.

16. Drehschneidvorrichtung nach Anspruch 13, 14 oder 15, bei der das Beipackblech das Gewicht des genannten einen Messers und des Beipackbleches auf das Gewicht eines diametrisch gegenüberliegenden Messers und eines eventuell vorhandenen Beipackbleches bringt.

17. Drehschneidvorrichtung nach einem der Ansprüche 10 bis 16, bei der jedes Messer einem identischen Messer diametrisch gegenüberliegt.

18. Drehschneidvorrichtung nach einem der Ansprüche 10 bis 17, ferner umfassend:

auf der Umfangsfläche der Walze montierte Greifer, wobei jeder Greifer der Position eines jeweiligen Messers zugeordnet ist und beim Gebrauch auf den Messern ruhen, um sie auf der Umfangsfläche der Walze festzuhalten; und wenigstens ein Beipackblech zum Einfü-

gen zwischen einem oder mehreren Messern und der Umfangsfläche der Walze oder dem jeweiligen Greifer.

5 19. Drehschneidvorrichtung nach einem der Ansprüche 10 bis 18, bei der die vorderen Kanten der Messerklingen den gleichen Radialabstand von der Rotationsachse der Walze haben.

10 Revendications

1. Procédé de préparation d'un mélange de tabac comprenant hacher une seule meule de feuilles de tabac traitées en au moins deux largeurs de hachage différentes.

2. Procédé de préparation d'un mélange de tabac comprenant hacher une seule meule de feuilles de tabac traitées en au moins deux longueurs différentes de brins hachés.

3. Procédé selon la revendication 1 ou 2, dans lequel le hachage en des largeurs ou longueurs différentes est exécuté par une seule opération de hachage.

4. Mélange de tabac comprenant des composants de mélange d'au moins deux différentes largeurs de hachage, dans lequel la composition de chacun desdits composants est la même que la composition générale du mélange.

5. Mélange de tabac comprenant des composants de mélange d'au moins deux longueurs différentes de brins hachés, dans lequel la composition de chacun desdits composants est la même que la composition générale du mélange.

6. Mélange selon la revendication 4 et 5.

7. Mélange de tabac selon la revendication 4, 5 ou 6, dans lequel lesdits composants de mélange sont des lanières hachées.

45 8. Mélange de tabac selon l'une des revendications 4 à 7, dans lequel un desdits composants de mélange est du tabac expansé.

9. Article à fumer comprenant un bâtonnet enveloppé comprenant un mélange de tabac selon l'une des revendications 4 à 8.

10. Hachoir rotatif pour trancher une matière comprenant:

un tambour (50) rotatif autour de son axe principal;

une pluralité de couteaux

(52,54,56,58,52',54',56',58') montés sur la surface circonférentielle du tambour, les lames des couteaux étant en saillie de la surface de la circonférence du tambour et s'étendant parallèlement à l'axe principal du tambour, caractérisé en ce que l'espacement angulaire entre les bords d'attaque des lames d'une paire de couteaux adjacents, est différent de l'espacement angulaire entre les bords d'attaque des lames d'une autre paire de couteaux adjacents.

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11. Hachoir rotatif selon la revendication 10, dans lequel au moins un couteau et de préférence au moins deux couteaux sont d'une épaisseur différente, mesurée perpendiculairement à la surface en contact avec le tambour, des autres couteaux.

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12. Hachoir rotatif selon l'une des revendications 10 ou 11, dans lequel au moins certains des couteaux sont des couteaux à longueur de brins contrôlée.

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13. Hachoir rotatif selon l'une des revendications 10, 11 ou 12, dans lequel une rondelle d'épaisseur est placée entre la surface circonférentielle du tambour et au moins un couteau qui est de moindre épaisseur qu'un autre couteau.

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14. Hachoir rotatif selon l'une des revendications 10 à 13, dans lequel une rondelle d'épaisseur est placée entre une pince qui agit sur la surface supérieure d'un couteau pour le tenir en position sur la surface circonférentielle du tambour et un couteau qui est de moindre épaisseur qu'un autre couteau.

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15. Hachoir rotatif selon la revendication 13 ou 14, dans lequel la rondelle d'épaisseur amène l'épaisseur dudit un couteau et la rondelle d'épaisseur, à l'épaisseur du couteau le plus épais du hachoir.

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16. Hachoir rotatif selon la revendication 13, 14 ou 15, dans lequel la rondelle d'épaisseur amène le poids dudit un couteau et la rondelle d'épaisseur, au poids du couteau et de la rondelle d'épaisseur le cas échéant diamétralement opposés.

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17. Hachoir rotatif selon l'une des revendications 10 à 16, dans lequel chaque couteau est diamétralement opposé à un couteau identique.

18. Hachoir rotatif selon l'une des revendications 10 à 17, comprenant en outre:

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des pinces montées sur la surface circonférentielle du tambour, chaque pince étant associée à la position d'un couteau respectif, qui pendant l'emploi agissent sur les couteaux pour les tenir sur la surface circonférentielle du tambour; et au moins une rondelle d'épaisseur à

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insérer entre un ou plusieurs des couteaux et la surface circonférentielle du tambour ou de la pince respective.

19. Hachoir rotatif selon l'une des revendications 10 à 18, dans lequel les bords d'attaque des lames des couteaux sont à la même distance radiale de l'axe de rotation du tambour.

Fig.1.

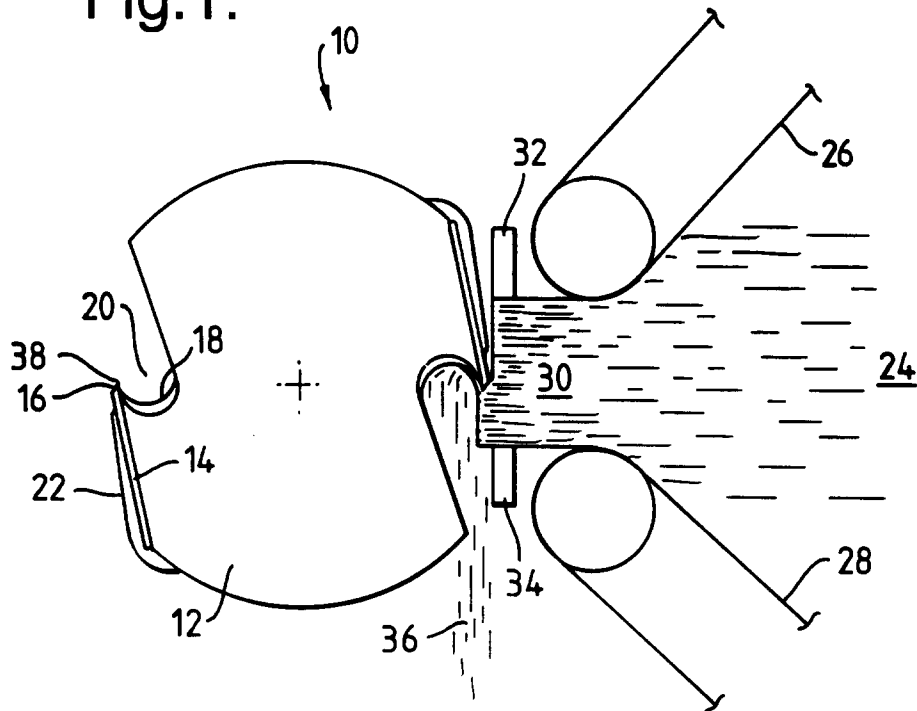


Fig.2.

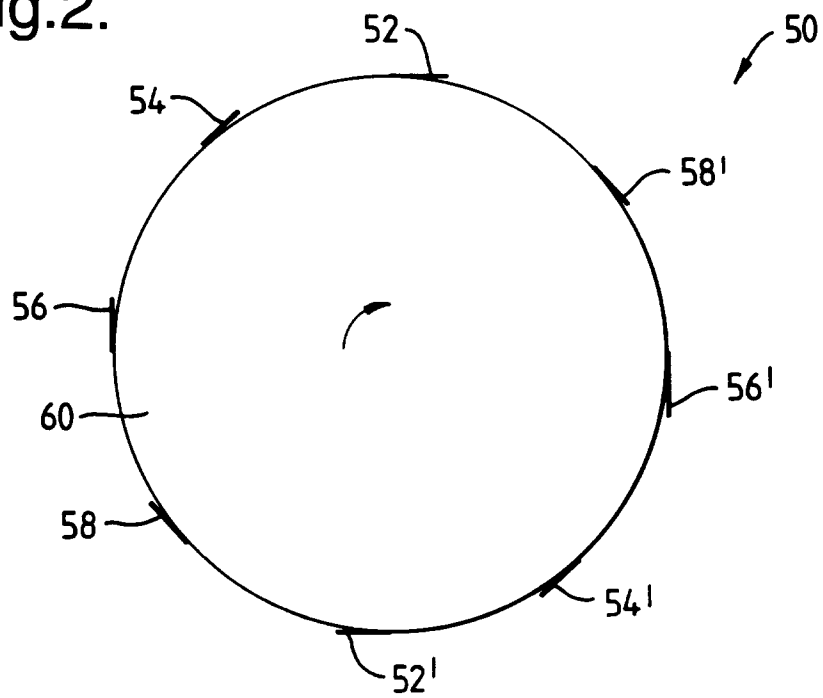


Fig.3.

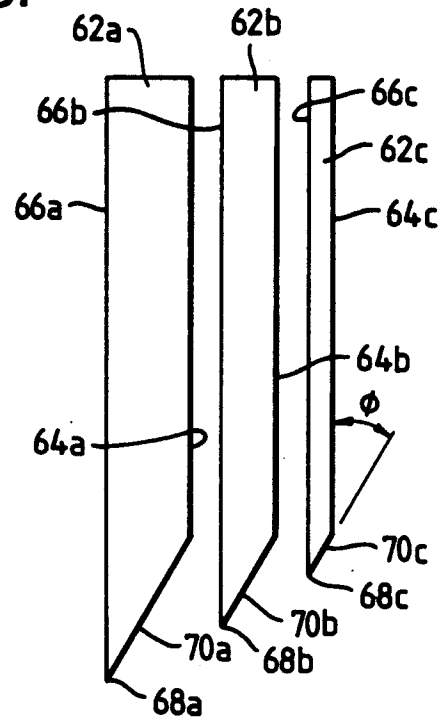


Fig.4.

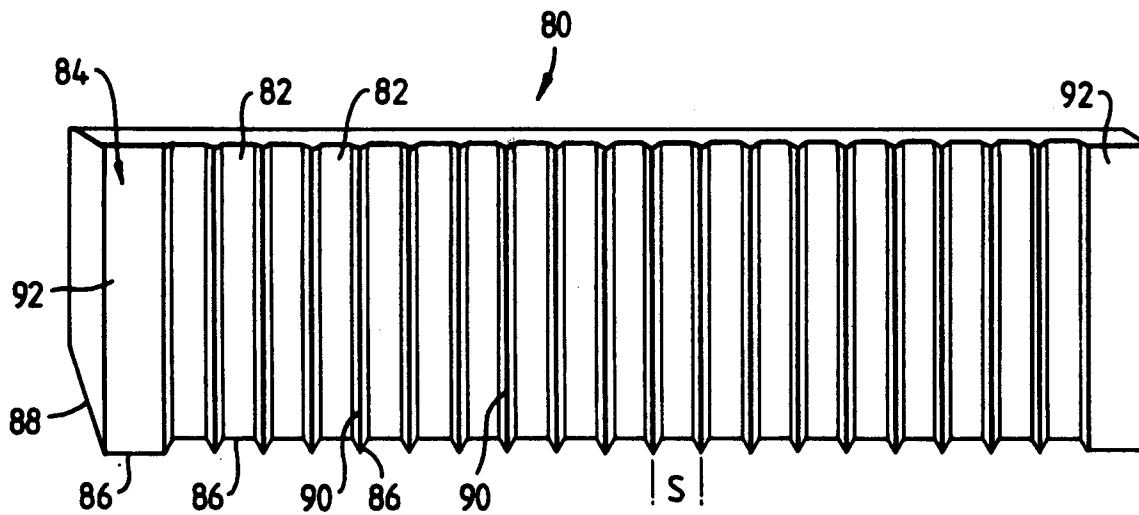


Fig.5.

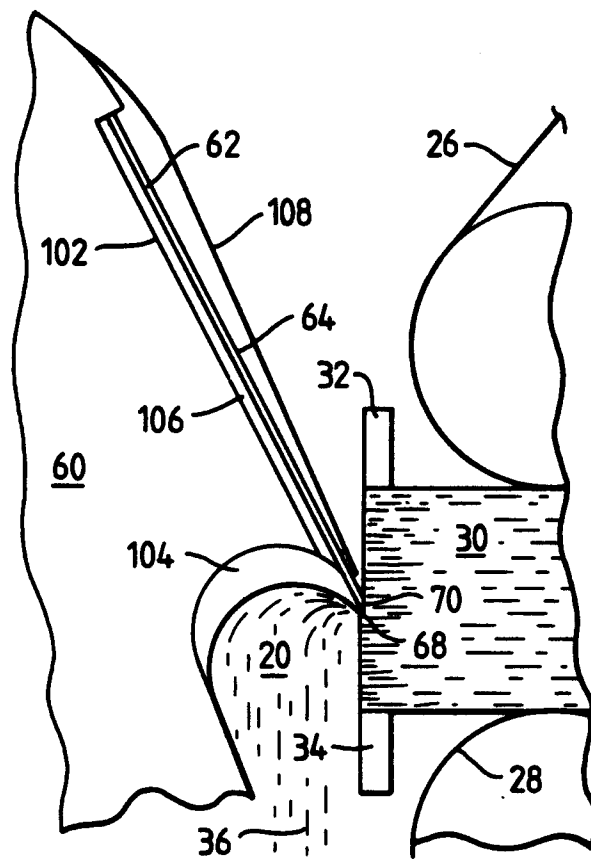


Fig.6A.

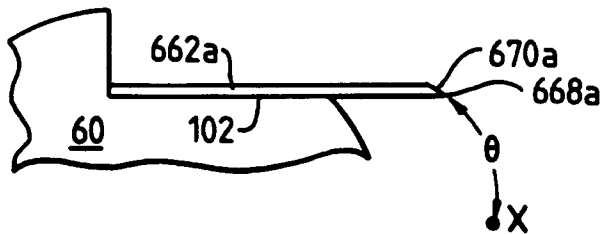


Fig.6B.

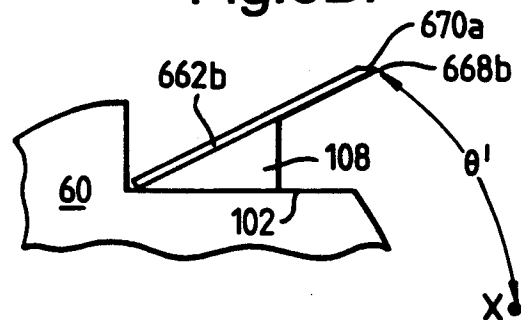


Fig.6C.

