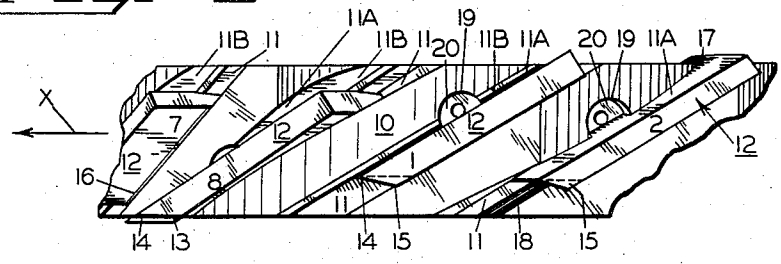
Aug. 23, 1960 D. L. JOHNSON 2,949,946

MEANS FOR PRODUCING FLAKES WHILE CUTTING A FLAT SURFACE ON WOOD

Filed March 28, 1958 4 Sheets-Sheet 1

Fig 2



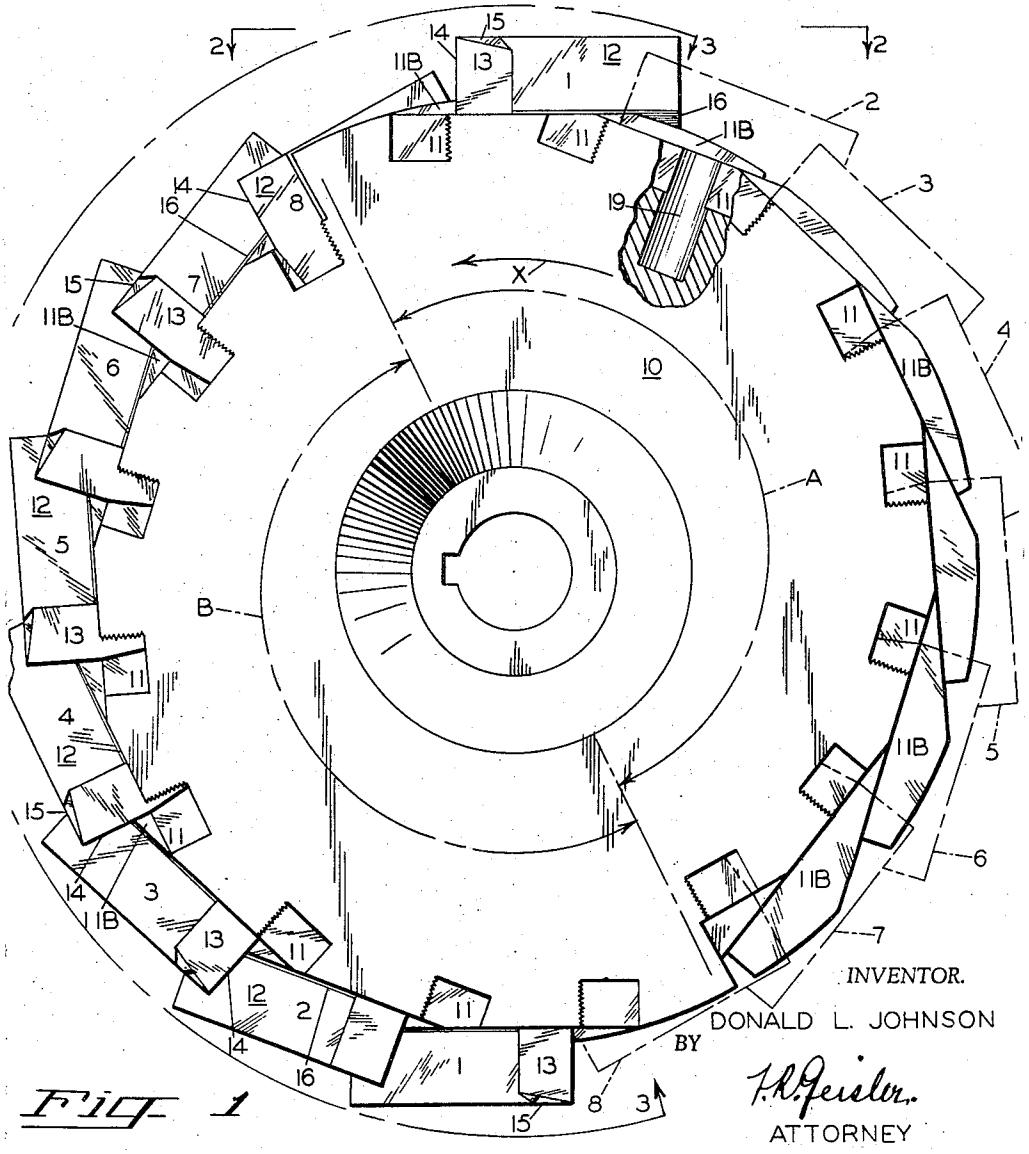


Fig 1

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MEANS FOR PRODUCING FLAKES WHILE CUTTING A FLAT SURFACE ON WOOD

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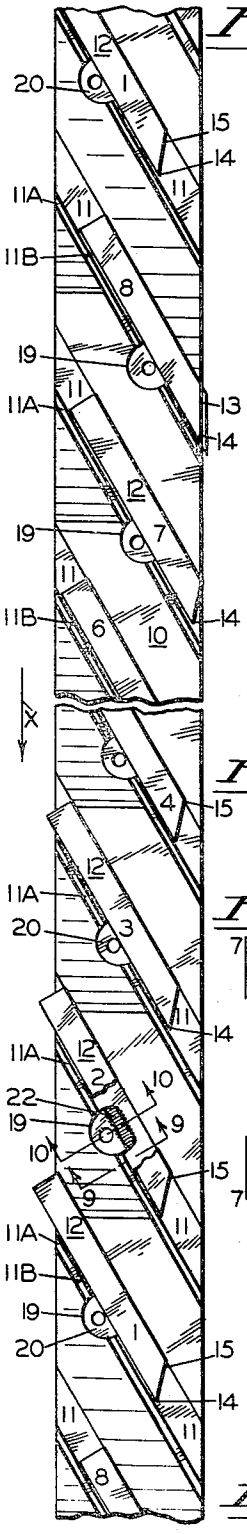

Fig. 3

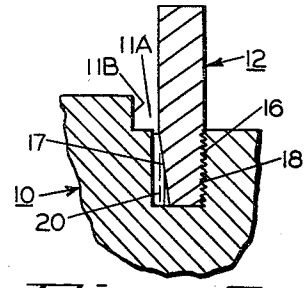

Fig. 9

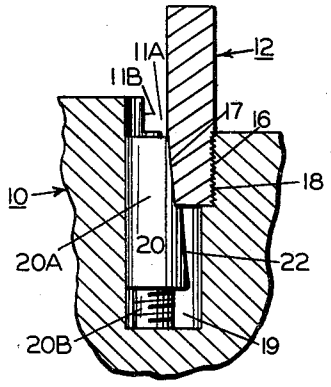

Fig. 10

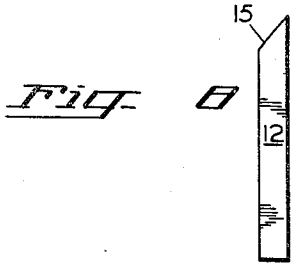

Fig. 8

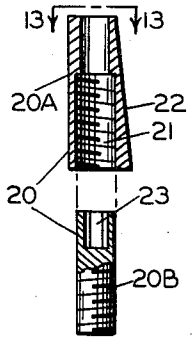

Fig. 12

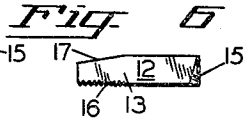

Fig. 6

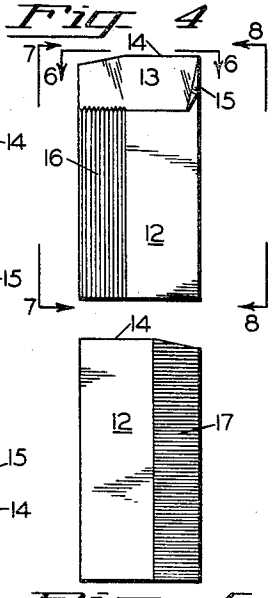

Fig. 4

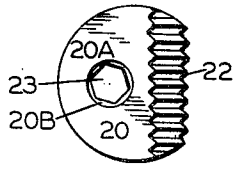

Fig. 13

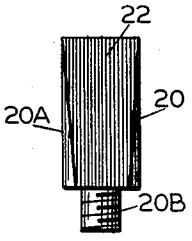

Fig. 11

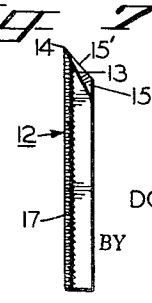

Fig. 7

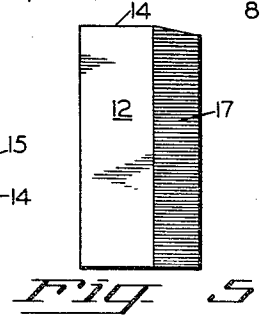

Fig. 5

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MEANS FOR PRODUCING FLAKES WHILE CUTTING A FLAT SURFACE ON WOOD

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Fig. 15

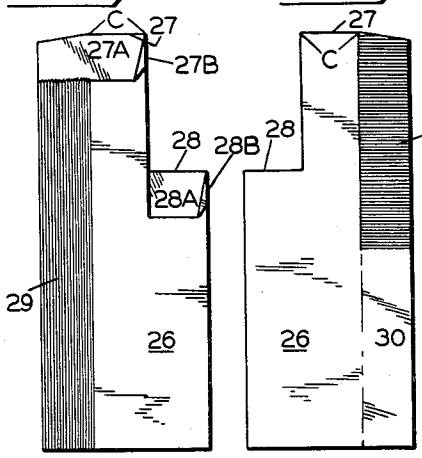


Fig. 16

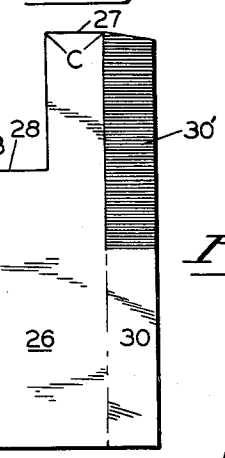
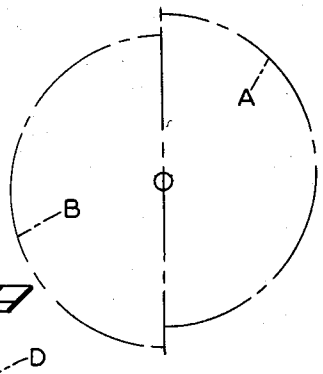


Fig. 19



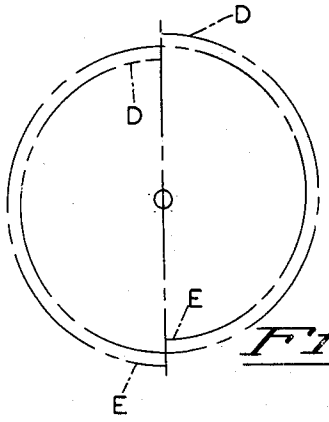


Fig. 20

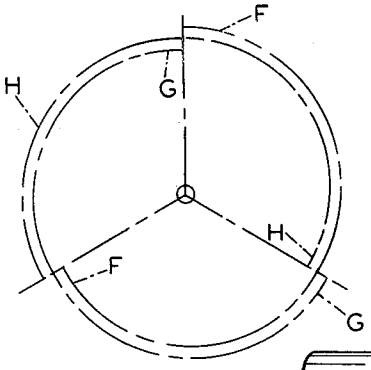


Fig. 21

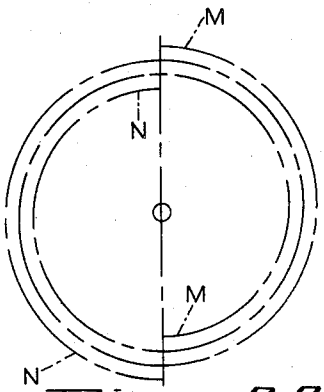


Fig. 22

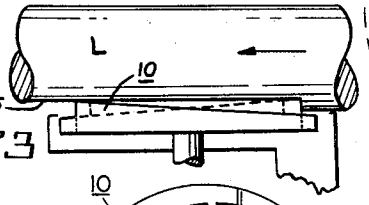


Fig. 23

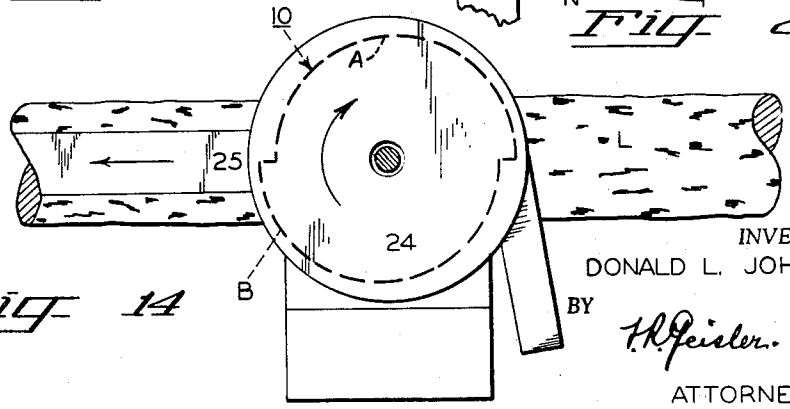


Fig. 14

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MEANS FOR PRODUCING FLAKES WHILE CUTTING A FLAT SURFACE ON WOOD

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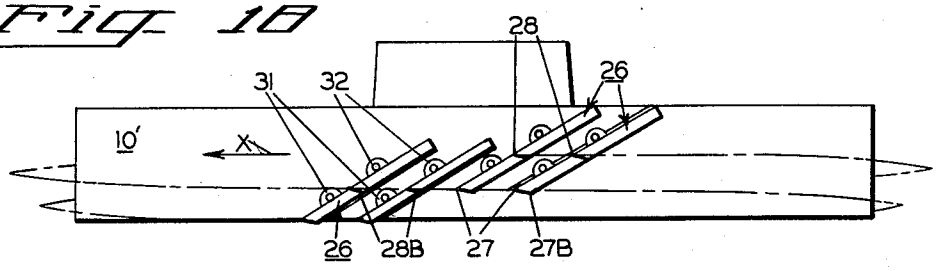
Fig. 16



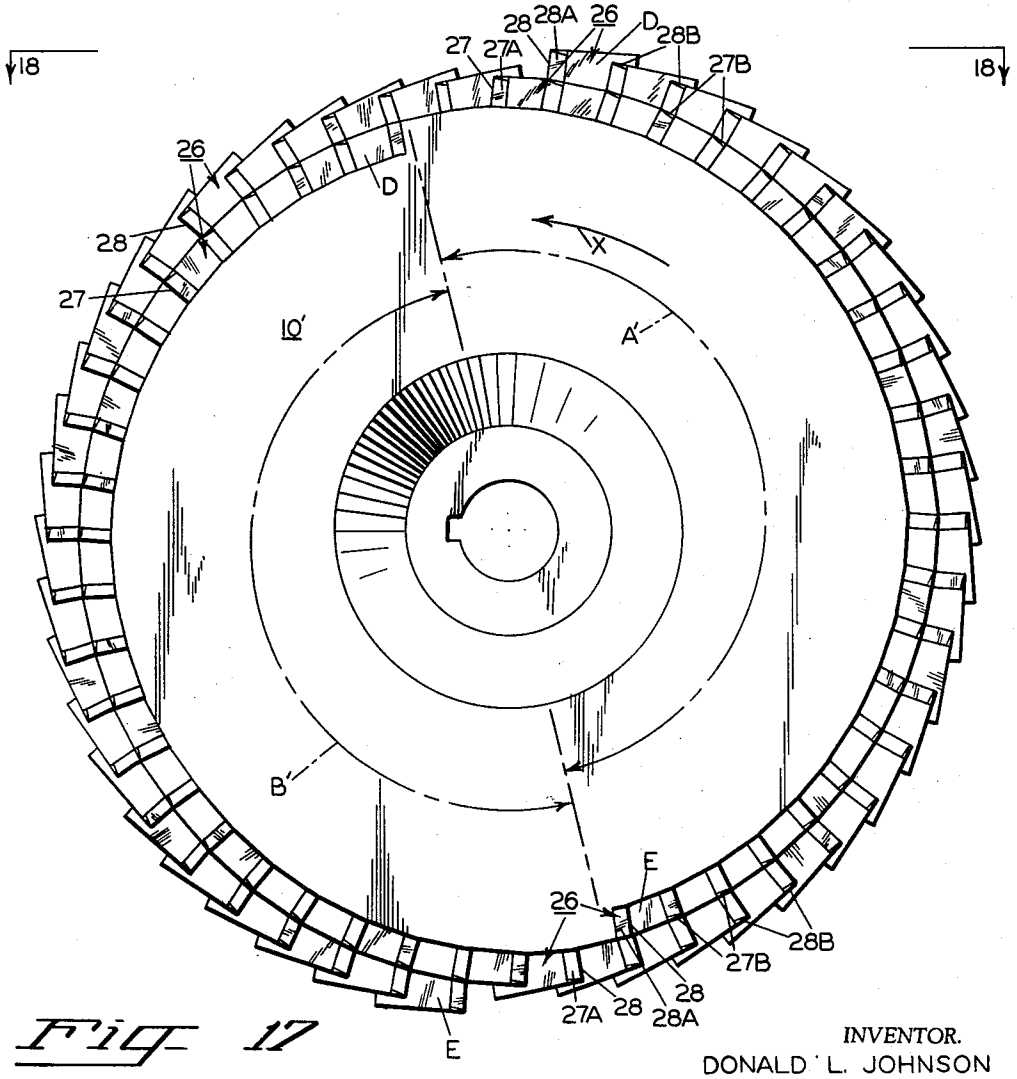


Fig. 17

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Patented Aug. 23, 1960

2,949,946

MEANS FOR PRODUCING FLAKES WHILE CUTTING A FLAT SURFACE ON WOOD

Donald L. Johnson, 831 Rust Bldg., Tacoma 2, Wash.

Filed Mar. 28, 1958, Ser. No. 724,549

6 Claims. (Cl. 144—162)

This invention, like that described in my pending application, Serial No. 627,687, filed under date of December 11, 1956, and now Patent Number 2,889,859, and entitled "Method and Means for Cutting a Flat Surface on Wood by Producing Wood Flakes from the Material as Removed," and like that described also in my pending application, Serial No. 701,405, filed under date of December 9, 1957, and entitled "Wood Flaking and Surfacing Machine," relates to the producing of special wood flakes as the result of the cutting of a desired flat surface longitudinally along a log or timber or other wood mass; and the wood flaking and surfacing means employed in the present invention is an additionally improved means by which the method described in said application Serial No. 627,687 can be carried out, and is a further improvement in the cutter head and cutting knives described in said application Serial No. 701,405.

An object of this present invention is to provide an improved and simplified cutter head assembly for producing the desired wood flakes and for cutting a desired flat surface on wood, in which the cutter head assembly will include improved knives removably mounted in the cutter head.

A more specific object of this invention is to provide an improved cutter head equipped with knives which are removably mounted therein by improved and more reliable locking means.

A related object of the invention is to provide a cutter head in which the knives can be readily adjusted to suit changed operating conditions.

Another object is to provide improved knives for a cutter head assembly of the type described in the above mentioned applications, which knives will be simpler in construction, less costly to produce, and easier to sharpen and maintain in service.

A further object of this invention is to provide improved knives of unique construction, suitable for use in such a cutter head of a wood flaking and surfacing machine, whereby each knife will present two or more cutting edges in place of a single cutting edge, without any change being required in the cutter head itself, thereby resulting in more cutting edges for the same diameter cutter head and thus enabling the depth of cut by the cutter head assembly to be increased with a corresponding increase in capacity for wood flake production.

These objects and other incidental advantages are attained with the employment of knives, adjustably and removably mounted in the cutter head, as hereinafter briefly described and explained with reference to the accompanying drawings.

In the drawings:

Fig. 1 is an elevational view of the working face of the cutter head assembly illustrating one arrangement of the improved knives in the same;

Fig. 2 is a fragmentary side view of the cutter head assembly taken on line 2—2 of Fig. 1;

Fig. 3 is an extended and developed side view of the cutter head assembly showing that portion indicated by line 3—3 in Fig. 1;

Fig. 4 is a side elevation of one of the cutting knives entirely removed from the cutter head;

Fig. 5 is an elevation showing the opposite side face of the same knife;

Fig. 6 is an outer end view of the knife showing its cutting edge and cutting spur, this view being taken on line 6—6 of Fig. 4;

Fig. 7 is a side view of one lateral edge of the knife taken on line 7—7 of Fig. 4;

Fig. 8 is ao similar view showing the opposite lateral edge of the knife, taken on line 8—8 of Fig. 4;

Fig. 9 is a fragmentary section through one of the knives and its slot in the cutter head, this section being taken on line 9—9 of Fig. 3, but drawn to a larger scale;

Fig. 10 is a similar section on line 10—10 of Fig. 3;

Fig. 11 is a view of the locking wedge plug by itself which is shown in operating position with respect to the knife in Fig. 10, this view showing the wall of the locking wedge plug which engages the knife and thus showing the side of the plug which is face towards the right in Fig. 10;

Fig. 12 is an exploded sectional elevation of the locking wedge plug positioned as in Fig. 10 but showing the two members of the same separated;

Fig. 13 is a plan view of the locking wedge plug taken on line 13—13 of Fig. 12, but drawn to twice the size for the sake of clarity;

Fig. 14 is an elevation, more or less diagrammatic, showing the cutter head operating under a hood, indicating in broken lines the two helical-spiral courses of the cutting edges of the knives and illustrating the cutting of a flat surface on a log;

Fig. 15 is an elevation showing one face of a modified form of cutter head knife in which the knife is provided with two separate cutting edges;

Fig. 16 is an elevation showing the opposite face of the same knife;

Fig. 17 is a view, partly diagrammatic, of the working face of the cutter head assembly, formed in accordance with the present invention, but showing plural-edged knives, of the type illustrated in Figs. 15 and 16, substituted for the single-edged knives shown in Fig. 1;

Fig. 18 is a fragmentary and partly diagrammatic side elevation of the cutter head assembly of Fig. 17 taken on line 18—18 of Fig. 17;

Fig. 19 is a diagrammatic representation of the cutter head of Fig. 1 with the two identical peripheral portions and with single-edged knives in each portion forming two radially-retreating, axially-advancing knife courses;

Fig. 20 is a similar diagrammatic representation of the cutter head of Fig. 17, having double-edged knives;

Fig. 21 is a similar representation of a cutter head having three identical peripheral portions with double-edged knives;

Fig. 22 is a similar representation of a cutter head having two identical peripheral portions but with triple-edged knives; and

Fig. 23 is a diagrammatic plan view looking downwardly on the parts of Fig. 14.

Referring first to Figs. 1, 2 and 3, the cutter head 10 which is so arranged as to be driven in the direction indicated by the arrow X, and thus driven counterclockwise as viewed in Fig. 1, has its periphery formed with oppositely positioned volute portions A and B (Fig. 1), each extending half-way around the periphery and each having a constantly decreasing radius, the radius thus decreasing clockwise or in the direction opposite from the direction of rotation of the cutter head. Identical, equally spaced knife slots 11 are cut into the periphery, the slots being slightly wider than the thickness of the knife bodies to be placed therein. However, these slots, instead of extending in radial planes perpendicular to

the working face of the cutter head, extend in planes inclined at a suitable acute angle, for example at an angle of 30°, with respect to the plane of the working face of the cutter head or with respect to a plane perpendicular to the cutter head axis. These inclined, equally spaced and identical slots terminate either on the working face of the cutter head or on the other or outer face of the cutter head, or, if preferred, depending upon the thickness of the cutter head, these slots may extend obliquely from one face of the cutter head to the other on the cutter head periphery.

The shape and construction of the knives **12**, which are shown mounted in these peripheral, obliquely-extending slots **11** in Figs. 1, 2 and 3, will be understood clearly from Figs. 5 to 8 inclusive. These knives are substantially rectangular bars of steel with a beveled surface **13** on one end which provides the cutting edge **14** at that end. However, along one side of this beveled surface **13**, a wedge-shaped raised portion is left so as to form a cutting spur **15** with a sharp, more steeply sloping, cutting edge **15'**, which edge is located in the same plane as the longitudinal side edge of the knife body. The function of this spur on the knife blade will be explained later.

The body portion of each knife **12** has longitudinally-extending serrations **16**, or sharp ridges and grooves, on that portion of one face (which is the trailing face with respect to the direction of rotation of the cutter head) which is positioned in the knife slot. The opposite face of the knife body, along the same edge, is tapered slightly towards that edge and this tapered surface **17** has similar serrations but the serrations are perpendicular to the edge instead of being parallel to the edge. The purpose of these two opposite sets of serrations is to enable the blade to be firmly but adjustably secured in its slot **11** of the cutter head. One side wall of each slot **11** in the cutter head is provided with serrations **18** (Figs. 9 and 10) to cooperate with the serrations **16** on the body of the knife. The inner portion of the opposite wall of the slot will be spaced a distance from the adjacent side face of the knife when the knife is in place in the slot since the width of the slot **11** is greater than the thickness of the knife body. The upper portion of this opposite wall is cut back as shown at **11B** in Figs. 9 and 10 to provide a passageway **11A** for the wood flakes. A cylindrical recess **19** (see Figs. 1, 3, and 10), which extends into the cutter head beyond the depth of the slot **11** also cuts into this opposite wall. The axis of this cylindrical recess **19** is perpendicular to the bottom wall of the slot and perpendicular to the cutter head axis. This cylindrical recess **19** accommodates a locking wedge plug **20** (shown in Figs. 10 to 13 inclusive) by which the knife is securely locked in place in its slot **11**.

The locking wedge plug **20** consists of a main body **20A** and a set screw **20B** which is adjustable in a threaded channel **21** (Fig. 12) in the main body **20A**. The main body **20A** is in the shape of a cylinder except that one side of the cylinder is cut away so as to form a flat inclined surface **22** having a slope with respect to the axis of the body **20A** which corresponds to the taper on the serrated tapered surface **17** of the knife body, and this inclined surface **22** of the plug is provided with serrations to correspond to and engage with the serrations on the tapered surface **17** of the knife body. The set screw **20A** of the plug has a socket **23** (Fig. 13), preferably hexagonal, so as to enable the set screw to be turned in the plug by inserting a hexagonal or splined wrench.

When the knife **12** is set in desired position in the slot **11**, with the serrations **16** of the knife body engaging the serrations **18** of the slot wall, and with the locking wedge plug **20** in lowered position in its recess **19**, the set screw **20B** is turned so as to force the serrated tapered face **22** of the plug body **20A** into tight wedging position with the knife **12**, the serrations on the plug face **22** being brought into engagement with the corresponding serrations **17** on the body of the knife. It will be apparent now from Figs. 3 and 10 that under such conditions the knife **12** will be firmly secured in place in its slot, since the double set of engaged serrations prevent any possibility of movement of the knife relatively with respect to the slot and cutter head. Also it will be apparent that, by releasing the set screw **20B** and thus enabling the plug body **20A** to be moved inwardly and out of engagement with the knife body, the knife **12** can be removed entirely from its slot or can be given a slight adjustment, longitudinally with respect to the slot and knife body, in the cutter head. The resharpening of the knives from time to time will necessitate a slight change in the relative positioning of the knives in their slots, but this means of mounting the knives enables such slight changes in positioning to be accomplished readily. These are important features in the improved and simplified construction of the knives and of their mounting in place in the cutter head.

In the cutter head illustrated in Figs. 1, 2 and 3, the two volute peripheral portions A and B of the cutter head **10** are each provided with eight knife slots **11** and a knife **12** secured in each slot by the means previously described, the knives in each of these volute peripheral portions A and B being numbered from **1** to **8** in Fig. 1. While the slots **11** and the body portions of the knives **12** all slope obliquely with respect to the plane of the outer or working face of the cutter head, the cutting edges **14** of the eight knives in each of the two peripheral portions A and B of the cutter head extend in planes which are perpendicular to the axis of the cutter head and thus in planes which are parallel to the plane of the outer or working face of the cutter head. Furthermore these parallel planes, in which the cutting edges of the knives are located, intersect the cutter head axis successively at equally spaced distances along the axis in a direction extending towards the work or towards the outer or working face of the cutter head. Thus, since the cutting edges of the eight knives in each of the volute peripheral portions A and B are positioned progressively forwardly towards the work while these knives and slots are located in volute peripheral portions the radius of which decreases the knives extending outwardly from these peripheral portions, the cutting edges of the knives in each of the two groups are located in a helical-spiral course, extending in a direction opposite the direction of rotation of the cutter head, constantly approaching the axis of rotation of the cutter head and constantly progressing forwardly longitudinally with respect to the rotational axis, in the nature of a helix. Thus the cutting edges of the eight knives in each of the two groups can be described as located in a radially-retreating, axially-advancing course. Consequently the cutting edges of the knives in the cutter head correspond to the cutting edges of the knives in the cutter heads described in the previously mentioned pending applications. The cutting edges of the corresponding knives in the two courses furthermore will be located in the same plane perpendicular to the cutter axis, with the result that the cutter head also will be in balance both statically and dynamically.

Fig. 14 illustrates how the knives in the two radially-retreating, axially-advancing courses on the volute peripheral portions A and B of the cutter head (the cutter head being indicated as operating under the hood **24**), will cause a flat surface **25** to be cut on the log L and produce the desired wood flakes during the cutting of this surface, while the log is moved in a direction perpendicular to the axis of the rotating cutter head. Assuming in this illustration that the effective cutting edge in each knife is 1½ inches long and that each peripheral portion A and B, thus each radially-retreating, axially-advancing knife course, approaches the axis of the cutter head

1½ inches during 180° rotation of the cutter head, longitudinal movement of the log 1½ inches during each 180° rotation of the cutter head will result in wood flakes of the maximum length being cut with the cutter head knives.

The thickness of the individual flakes will be determined by the difference in level between the cutting edges of the successive knives in each of the radially-retreating, axially-advancing knife courses. Since the improved and simplified knife construction and the improved method and means for mounting the knives in their slots enable the knives to be adjusted in the slots, the difference in level between the cutting edges of the successive knives can be increased if thicker flakes are desired, and vice versa. In any arrangement this difference in level between the cutting edges of the successive knives must however be made the same throughout both knife courses.

As the knife edges slice through the wood to produce the wood flakes the severing of the spiral ends of the flakes from the body of the wood is facilitated by the spurs **15** (Figs. 2, 3, 4 and 7) carried at the outer edge of the cutting edges of the knives since the spurs extend down further into the wood and thus cut the ends of the flakes loose instead of having these spiral ends of the flakes merely break loose from the body of the wood, and consequently the employment of such spurs is of special importance particularly in the cutting of thicker flakes since the spurs prevent the possibility of such flakes being severed from the wood body with broken or frayed ends, instead of with clearly defined cut ends. In the arrangement illustrated in Figs. 1, 2 and 3 all of the knife edges accordingly, with the exception of the last knife in each course, are formed with cutting spurs such as that shown at **15** in Fig. 4. Since the last knife of each course cuts the final surface produced on the mass of wood, a spur on the last knife in each course would mar the resulting straight cut surface and consequently the spur would be omitted from the last knife.

From Figs. 4 to 7 inclusive it will be apparent that the sharpening of the individual knives (and also the sharpening of their spurs), is a relatively simple matter when the knives are removed from their slots in the cutter head. Since the knives can be adjusted longitudinally in their slots in the cutter head, as previously explained, the knives can continue to be used even after being resharpened several times. Preferably each of the slots **11** of the cutter head will have a special marking indicating the position of the cutting edge of the knife according to a predetermined and established difference in level between successive knife cutting edges, and such marking will thus facilitate the setting of the knives in place after their removal for resharpening or in the event of replacement.

Thus far each knife has been described as having a single cutting edge, such as the edge **14** of the knife **12**. I have found, however, that it is possible and practical also to form each knife with two or even more separate cutting edges. Figs. 15 and 16 show opposite side elevations of a knife **26** formed with two separate cutting edges **27** and **28**. This knife, with the stepped cutting end, resembles to considerable extent the single-edged knife **12** previously described. Thus the body of this knife has longitudinally-extending serrations **29** (Fig. 15) on one face near one lateral edge (corresponding to the serrations **16** of the knife **12** shown in Fig. 4), and the opposite face of the body of the knife has a tapered portion **30** (similar to the tapered portion **17** of the knife **12** shown in Fig. 5), and at least half of this tapered portion **30** has serrations **30'** which extend perpendicular to the lateral edge of the knife body.

In order to provide the two separated cutting edges **27** and **28** the end of the body portion of this modified knife is made in stepped formation and the stepped portions are each then given a beveled face, as shown at **27A** and **28A** in Fig. 15, so as to form the two desired cutting edges **27** and **28**. The effective length of the two cutting edges is made substantially the same, that is to say, the cutting edge **28** is substantially the same length as the working portion of the cutting edge **27**, indicated at C in Figs. 15 and 16, which is the portion of that cutting edge which extends beyond the cutter head periphery when the knife is secured in its slot in the cutter head. These cutting edges extend in planes which are perpendicular to the cutter head axis. Both cutting edges **27** and **28** preferably are provided with cutting spurs **27B** and **28B** respectively, similar to the spur **15** on the knife **12** previously described (except that the cutting spur **27B** on the edge **27** is omitted in the case of the last knife in each helical spiral course).

When each knife **26** is formed in this way, with two separate cutting edges, the body of the knife will be longer and wider than in the case of the knife **12** having only one cutting edge of the same size. Consequently for mounting these larger knives in their cutter head grooves I consider it preferable to use a pair of locking wedge plugs for each knife instead of only a single locking wedge plug. These pairs of locking wedge plugs are indicated at **31** and **32** in Fig. 18 for each of the blades **26**. These locking wedge plugs are the same as the locking wedge plug **20** (Fig. 12) previously described. However, when a pair of locking wedge plugs are to be used for each blade, it is preferable to omit the serrations **30'** (Fig. 16) from approximately one-half of the tapered surface **30** so as to avoid any possible difficulty in always having the serrations of both plugs come into exact engagement with the same series of serrations on the tapered surface of the knife, and the engagement of a single wedge plug with such serrations is sufficient to prevent any longitudinal movement of the knife in the slot against such serrations engagement.

Figs. 17 and 18 show a cutter head **10'** having two volute peripheral portions A' and B', similar to cutter head **10** in Fig. 1, and similarly having equally spaced, obliquely sloping knife slots. It will be noted that the two cutting edges **27** and **28** of each knife in this arrangement constitute in effect separate cutting knives located approximately 360° apart in separate radially-retreating, axially-advancing courses. Thus the knife course marked D in Fig. 17 begins with the cutting edge **28** of the first knife **26** while the cutting edge **27** of that same knife constitutes part of the second knife course E which begins later on the cutter head. In this particular arrangement as illustrated there are two radially-retreating, axially-advancing knife courses these being 180° apart on the cutter head, but the use of the pair of separated or stepped cutting edges on each knife enables each of the two knife courses D and E to extend for approximately 360° instead of only for 180°. In other words, there are twice as many cutting knife edges on the same cutter head, which enable the cutter head to make a deeper cut in the wood surface with each revolution of the cutter head and consequently to produce a greater number (in this case twice as many) of the desired identical special wood flakes with each revolution.

Instead of having the cutter head provided with two volute peripheral portions, each having the same number of slots for the double-edged knives, it would also be possible to provide the cutter head with a larger number of identical volute portions and consequently similarly to increase the number of radially-retreating, axially-advancing courses. Fig. 19 is a diagrammatic representation of the cutter head of Fig. 1 having two volute peripheral portions A and B with two radially-retreating, axially-advancing knife courses each extending for 180°. Fig. 20 is a corresponding diagrammatic representation of the cutter head of Fig. 17, similarly having two volute peripheral portions but, due to the use of the two-edged knives as previously explained, having two radially-retreating, axially-advancing knife courses D and E each extending for 360°.

Fig. 21 illustrates diagrammatically how a cutter head

could have three volute peripheral portions and, with the use of two-edged knives, have three radially-retreating, axially-advancing knife courses F, G and H each extending for 240°.

Fig. 22 illustrates further how a cutter head with two volute peripheral portions, by using knives with three separate stepped cutting edges, in place of the two-edged knife 25 of Figs. 15 and 16, would have two radially-retreating, axially-advancing knife courses M and N each extending one and one-half times around the cutter head.

Thus, in the carrying out of this invention with a cutter head having volute peripheral portions, the number of radially-retreating, axially-advancing knife courses will be equal to the number of volute peripheral portions and whether each course has the same length as a volute portion or has two or more times the length of each volute portion will be governed by the number of separate cutting edges provided in the special knives employed. In any case, however, the cutting edges in all the knives on a cutter head must be the same effective length, the successive knife edges in each course must be spaced the same distance apart, and the difference in level between successive knife edges in each course must be the same for proper operation of the cutter head and for producing the desired identical wood flakes.

I claim:

1. In a rotating cutter head for a wood flaking and surfacing device, a plurality of slicing knives secured on said cutter head and extending from its periphery, the periphery of said cutter head provided with equally spaced, substantially rectangular mounting slots for said knives, said slots inclined forwardly in the direction of rotation of said cutter head and extending in planes all having the same angularity with respect to the cutter head axis, each of said knives having a body with a thickness less than the width of said slots, the forward end of each knife body beveled to form a cutting edge, the cutting edges of said knives extending perpendicular to said cutter head axis, the trailing face of each knife having longitudinally-extending serrations, the adjacent wall of each slot having corresponding engaging serrations, the leading face of each knife body having a slight transverse taper and having serrations extending laterally on said tapered portion, a locking wedge plug for each knife, each slot having a recess for said wedge plug, each wedge plug having a face adapted for engagement with said latter mentioned tapered portion on the knife body, means for releasably securing said wedge plug in locking engagement with the knife body, the periphery of said cutter head being so formed that said slots will be arranged in a series with the radial distance of said slots from the axis of said cutter head decreasing in said series in the direction opposite from the direction of rotation of said cutter head, and said knives so positioned in said slots that said cutting edges will also be located in an axially-advancing course throughout said series.

2. In a rotating cutter head for a wood flaking and surfacing device, a plurality of slicing knives secured on said cutter head and extending from its periphery, the periphery of said cutter head provided with equally spaced, substantially rectangular, mounting slots of uniform width for said knives, said slots inclined forwardly in the direction of rotation of said cutter head and extending in planes all having the same angularity with respect to the cutter head axis, each of said knives comprising a substantially straight bar with a thickness less than the width of said slots, the forward end of each knife bar beveled to form a cutting edge, the cutting edges of said knives extending perpendicular to said cutter head axis, the trailing face of each knife bar having longitudinally-extending serrations on that portion of the face within the knife slot, the adjacent wall in each slot having corresponding engaging serrations, the leading face of each knife bar having a slight transverse taper on the portion within the knife slot and having serrations extending laterally on said tapered portion, a locking wedge plug for each knife, each slot having a recess for said locking wedge plug, each locking wedge plug having a serrated face adapted for engagement with said latter mentioned lateral serrations on said tapered portion on the knife bar, means for releasably securing the locking wedge plug in locking engagement with the knife bar, the periphery of said cutter head being so formed that slots will be arranged in a plurality of identical series with the radial distance of said slots in each series from the axis of said cutter head decreasing in the direction opposite from the direction of rotation of said cutter head, and said knives in each series so positioned in said slots that said cutting edges will also be located in an axially-advancing course in each series.

3. In a rotating cutter head for a wood flaking and surfacing device, a plurality of slicing knives secured on said cutter head and extending from its periphery, the periphery of said cutter head provided with equally spaced mounting slots for said knives, said slots inclined forwardly in the direction of rotation of said cutter head and extending in planes all having the same angularity with respect to the cutter head axis, each of said knives having a body substantially rectangular in cross section with a thickness less than the width of said slots, the forward end of each knife body beveled to form a cutting edge, the cutting edges of said knives extending perpendicular to said cutter head axis, means for removably and adjustably locking each knife in its slot, the periphery of said cutter head being so formed that said slots will be arranged in a series with the radial distance of said slots from the axis of said cutter head decreasing in said series in the direction opposite from the direction of rotation of said cutter head, and said knives so positioned in said slots that said cutting edges will be located in an axially-advancing course throughout said series.

4. In a rotating cutter head for a wood flaking and surfacing device, a plurality of slicing knives secured on said cutter head and extending from its periphery, the periphery of said cutter head provided with equally spaced, substantially rectangular, mounting slots for said knives, said slots inclined forwardly in the direction of rotation of said cutter head and extending in planes all having the same angularity with respect to the cutter head axis, each of said knives comprising substantially a straight bar with a thickness less than the width of said slots, the forward end of each knife bar formed into a pair of stepped cutting edges, the cutting edges of said knife bars all extending perpendicular to said cutter head axis, means for removably locking each knife bar in its slot, the periphery of said cutter head being so formed that said slots will be arranged in a plurality of identical series with the radial distance of said slots in each series from the axis of said cutter head decreasing in the direction opposite from the direction of rotation of said cutter head, and the knife bars in the slots in each series being so positioned in said slots that the consecutive cutting edges of said knife bars will be located in axially-advancing courses.

5. In a rotating cutter head for a wood flaking and surfacing device, a plurality of slicing knives secured on said cutter head and extending from its periphery, the periphery of said cutter head provided with equally spaced, substantially rectangular, mounting slots of uniform width for said knives, said slots inclined forwardly in the direction of rotation of said cutter head and extending in planes all having the same angularity with respect to the cutter head axis, each of said knives having a body substantially rectangular in cross section with a thickness less than the width of said slots, the forward end of each knife body formed into a plurality of parallel stepped cutting edges, said cutting edges of said knives extending perpendicular to said cutter head axis, the trailing face of each knife body having longitudinally-extending serrations on that portion of the face within the knife slot,

the adjacent wall in each slot having corresponding engaging serrations, the leading face of each knife body having a slight transverse taper on the portion within the knife slot and having serrations extending laterally on said tapered portion, a locking wedge plug for each knife, each slot having a recess for said locking wedge plug, each locking wedge plug having a face adapted for engagement with said latter mentioned tapered portion on the knife body, means for releasably securing said locking wedge plug in locking engagement with the knife body, the periphery of said cutter head being so formed that said slots will be arranged in a plurality of identical series with the radial distance of said slots in each series from the axis of said cutter head decreasing in the direction opposite from the direction of rotation of said cutter head, and the knives in the slots in each of said series

being so positioned in said slots that the consecutive cutting edges of said knives will be located in axially-advancing courses.

6. The combination set forth in claim 1 with the forward beveled end of each knife having a cutting spur along the outer edge of the beveled face.

References Cited in the file of this patent

UNITED STATES PATENTS

194,221	Clarkson	Aug. 4, 1877
717,719	Schmidt	Jan. 6, 1903
2,811,183	Mottet	Oct. 29, 1957

FOREIGN PATENTS

737,384	Great Britain	Sept. 28, 1955