CHIPPING HEAD ASSEMBLY

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References Cited

UNITED STATES PATENTS

1,332,736 3/1920 McQuestion 144/230 X
1,664,083 3/1928 Miller 144/230
2,498,721 2/1950 Stafford 29/105
2,682,617 6/1954 Reich et al. 144/230 X

ABSTRACT

A rotary chipping head assembly having a rotatable head member provided with a peripheral V-shaped seat having planar walls extending parallel to the axis of rotation of the head member and which fittedly receives a chipping knife the root section of which has flat faces which engage the flat walls of the V-shaped seat. A clamp secured to the head member bears against the root section to maintain the knife in the seat. One of the flat faces of the root section of the knife has a parallel sided key way extending perpendicular to the axis of rotation of the head which receives the head of a bolt, the shank of which rotatably fits in a bore opening out of the confronting wall of the V-shaped seat. The bolt head, which serves as a key to prevent lateral displacement of the chipping knife, is in the form of a regular polygon having an even number of side faces and has its geometric center offset from the axis of the shank so as to enable lateral adjustment of the chipping knife.

3 Claims, 3 Drawing Figures
3,838,724

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CHIPPING HEAD ASSEMBLY

FIELD OF THE INVENTION

This invention relates to wood chippers and in particular, but not limited to, wood chippers of the type for providing a log with a transverse profile for obtaining maximum utilization of the log in production of dimensioned lumber.

BACKGROUND OF THE INVENTION

Maximum utilization of a log is directly related to the amount of dimensioned lumber available from the log. For many years reduction of a log, particularly a small log, to a point suitable for further reduction to the dimensioned lumber usually resulted in production of waste slabs which were either burned or were reduced to chips in a second operation thus increasing production costs. Machines have, of recent years, been developed to avoid wastage and reduce production costs normally engendered of slabs.

In these types of machines, best described in U.S. Pat. No. 3,259,157 to Runnion, a debarked log is fed through a chipping machine which is adapted to provide chips of a size suitable for wood pulp, which also obtains a transverse profile calculated to enable maximum usage of the log for production of dimensioned lumber. The profiled log, commonly termed a cant, is conventionally passed through a gang circular saw assembly which then reduces the cant to precalculated dimensioned lumber.

The cant profile, to obtain optimum utilization of the log for production of dimensional lumber, usually presents a stepped configuration symmetrical about its vertical and horizontal axes of which the steps at one side are coplanar with those of the other side. This configuration results in the presentation of central upper and lower ribs of the rectangular cross-section having vertical side faces which extend in parallelism the length of the cant. Guides which receive the ribs on passage of the cant through the gang saw guide the cant with positive restraint against lateral displacement while the gang circular saws divide the cant into dimensioned lumber by sawing the log longitudinally on the parallel vertical faces of the chipped cant. It is of great importance, therefore, that the side faces of the upper and lower ribs are true throughout their length as any deviation will result in lateral deviation of the log from its predetermined path through the saws and creates feed problems.

The chipping assembly which produces the desired cant profile, conventionally, has a plurality of chipping heads rotatable on axes perpendicular to the travel of the log and which carry peripheral knives which cut parallel to the grain of the log. Some of the knives, due to the step configuration of the cant to be produced, must cut right angle re-entrant corners the length of the log to produce the ajoining vertical and horizontal coplanar faces. Consequently these knives must be seated and fixed on their respective heads in a manner such that they will not shift under lateral loads so as to avoid deviation of the side walls of the upper and lower cant ribs, yet they must be capable of lateral adjustment to compensate for changes in knife edge dimension whenever the chipping knives are sharpened.

Conventionally, some chipping knives have a key connection to the head to prevent lateral shifting of the chipping knife under lateral loads. Conventional key configurations for joining a pair of relatively movable elements, however, do not permit adjustment of one of the elements relative to the other.

SUMMARY OF THE INVENTION

The present invention provides a chipping head assembly embodying a novel arrangement of chipping knife, head, and a key assembly to provide keyed restraint of the chipping knife against the lateral movements on the head and yet which also enables the knife to be adjusted laterally of the head.

The assembly of the present invention includes a head rotatable about an axis, the head having a V-shaped peripheral seat defined by a pair of planar walls extending substantially at right angles to each other and parallel to the axis of rotation of the head, a chipping knife seating in the V-shaped seat having root section provided with a pair of faces making intimate contact with the faces of the V-shaped seat, one of the faces of the root section having a key way having parallel side walls extending in a direction perpendicular to the axis of rotation of the head, releaseable clamping means mounted on the head and engageable with the chipping knife for maintaining the latter seated in the V-shaped seat, a key assembly having a head portion for fitted reception in the key way, mounted for rotation on a wall of the V-shaped seat confronting the key way face of the knife for rotation about an axis normal to said wall, said key head being shaped as a regular polygon having an even number of sides and having its geometric center offset from the axis of rotation of the key for providing incremental lateral adjustment of the knife on the head.

The drawings and description following merely exemplify one form of the invention which however, is capable of expression in structure other than that described and illustrated.

Description of the drawings.

FIG. 1 is a view showing, partially, a chipping head assembly in accordance with the invention.

FIG. 2 is a view taken in the direction 2--2 of FIG. 1 to show configuration of a chipping knife, portions being removed for clarity.

FIG. 3 is a section view taken generally on line 3--3 of FIG. 1.

DETAILED DESCRIPTION

Referring to the drawings, particularly FIGS. 1 and 3, a chipping head assembly in accordance with the invention has a head 10 which is mounted for rotation on a driven shaft, not shown shown about an axis 13.

The head has a peripheral V-shaped seat 14 defined by a pair of seat walls 15 and 16 which extend substantially at right angles to each other and both of which extend parallel to the rotational axis 13 of the head. Wall 15 serves as a back wall and wall 16 serves as an inner wall. The back wall is biased about 20 degrees or so forwardly from a plane projected radial to the head through the juncture of the two walls.

The seat 14 receives a chipping knife 21 which has a root section, generally 22, having planar back and inner faces 23 and 24, respectively, which bear the same angular relationship to each other which exists between the walls 15 and 16 of the seat. The root section has a rearwardly inclined planar front face 27, the angle between the inner face and the front face being in the order of 50°.
The chipping knife has a knife section 28 having side walls 29—29 stepped laterally outwards from the root of the knife and which diverge forwardly to a transverse cutting edge 31. The cutting knife is widest at its cutting edge, the forward divergence of side walls 29—29 providing side clearance when the knife is used for re-entrant cutting. As is common with this type of knife a splitting blade 33 is positioned beneath the cutting edge to split over-size cards cut by the cutting knife, into chips of standard dimension for use in pulping.

The chipping knife is held in its seat through the mediation of a clamp, generally 33. The clamp has a clamping block 34 mounted on a stud 35 projecting from the head and has a pair of end faces 36 and 37 which engage the front face 27 of the chipping knife root section and a sloped face 38 of the head. Pressure of the clamping block on the chipping knife, to frictionally maintain the latter in its seat, is applied by a nut 39 threaded on the stud.

A key assembly, generally 41, positively prevents displacement of the knife laterally of the head against lateral forces imposed on the knife. The key assembly includes a key 42, proper, which takes the form of a bolt having a cylindrical shank 43 and a square head 44. The shank 43 has a nice, rotatable fit in a bore 45 which has its axis 46 normal to, and opens out of, the back wall 15 of the seat adjacent the periphery of the head. The face 23 of the root section of the knife has a key-way 47 which is rectangular in shape, with parallel side walls, extending there across in a direction perpendicular to the axis of rotation of the head. The key-way nicely receives the key head 44 when the side faces of the key head and the side walls of the key way are parallel.

The key head, see FIG. 2, has its geometric center 48 offset from the axis 46 of the key shank 43 a distance D so that incremental lateral adjustment of the key head through three positions can be obtained by rotatably adjusting the key head through 90 degree increments. With a square head, three positioned adjustment of the key head, and with it the chipping knife, is possible.

It is to be understood that although a square headed key head is shown other suitable key head configurations can be used provided that the key head is a regular polygon, e.g., hexagonal or octagonal, having an even number of side faces so that each side face has a corresponding opposite parallel side face.

We claim:
1. A chipping head assembly including:
   a. a driven head member rotatable about a axis,
   b. the head member having a peripheral V-shaped seat defined by a pair of walls extending parallel to the axis of rotation of the head member,
   c. a chipping knife having a root section having a pair of faces making intimate contact with the walls of the seat,
   d. one of the faces of the root section of the chipping knife having a keyway of rectangular cross-section providing a pair of parallel side walls extending in a direction perpendicular to the axis of rotation of the head member,
   e. a key member taking the shape of a regular polygon having an even number of side faces secured on the seat wall confronting the keyway of the chipping knife for fitted reception in the keyway, and rotatable about an axis perpendicular to the last mentioned seat wall,
   f. the key member having a geometric center offset from its center of rotation so as to enable incremental lateral adjustment of chipping knife on the head member, and
   g. means for clamping the chipping knife in the seat.
2. A chipping head assembly as claimed in claim 1 in which the key includes a cylindrical shank adapted to be rotatably received in a bore opening out of, and having its axis normal to the last mentioned wall of the seat and a head at the outer end of the shaft taking the shape of a regular polygon having an even number of side faces and having its geometric center offset from the axis of the key shank.
3. A chipping head assembly as claimed in claim 2 in which the key head is square.

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