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HEADBLOCK AND KNEE ASSEMBLIES FOR SAWMILL CARRIAGES

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2 Sheets-Sheet 1

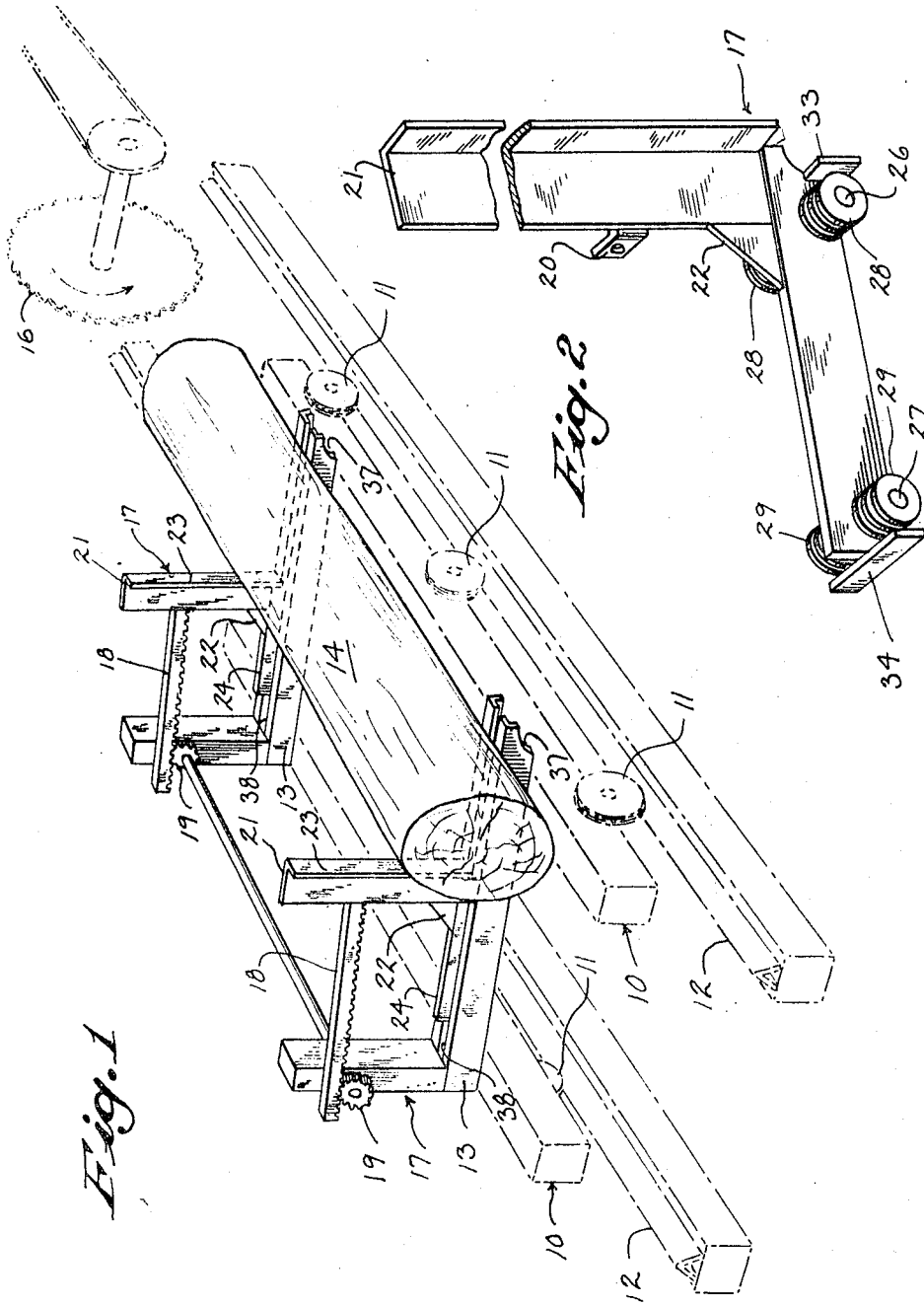


Fig. 1

Fig. 2

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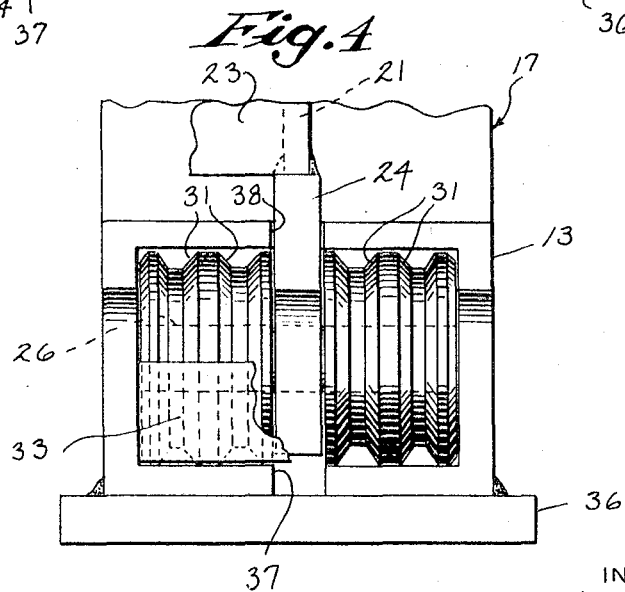
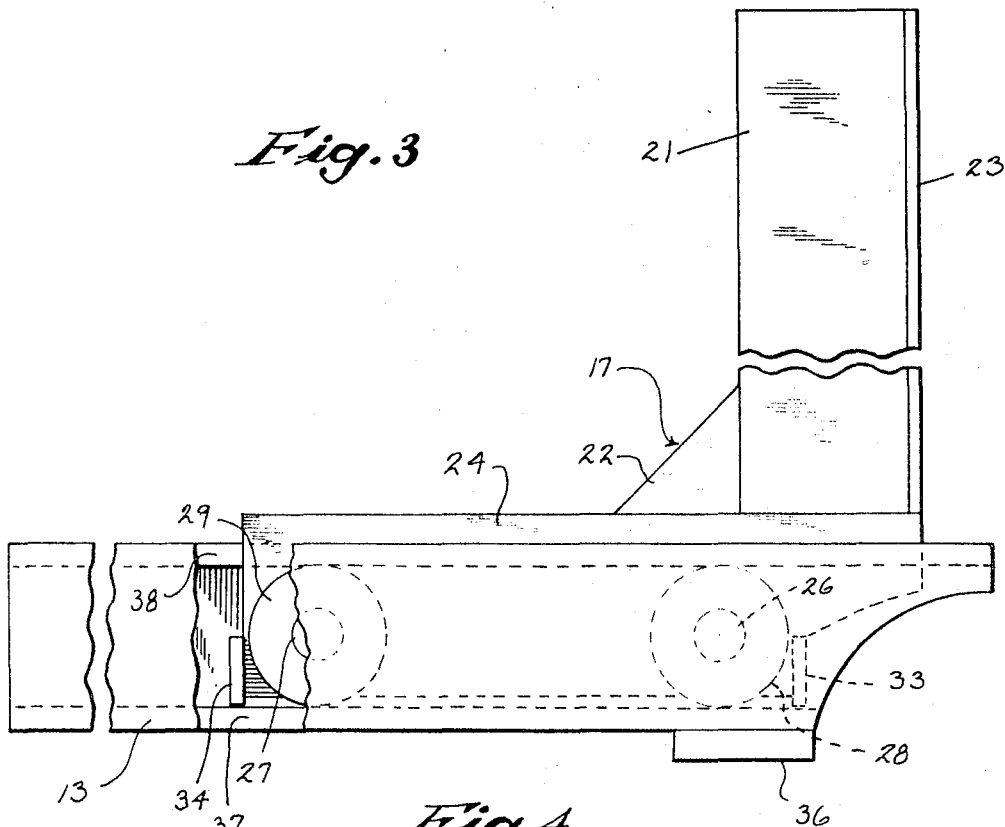
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HEADBLOCK AND KNEE ASSEMBLIES FOR SAWMILL CARRIAGES

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3 Claims

ABSTRACT OF THE DISCLOSURE

To provide a smoothly operable headblock and movable knee assembly for a sawmill carriage the invention includes a channel-shaped headblock within which there is movably carried a wheeled base member supporting an upright long-engaging knee, the wheeled design of said knee unit reducing friction and wear as said unit is shifted within said headblock to adjust the position of a log for succeeding longitudinal cuts, and which improved assembly includes means for preventing sawdust and wood chips from accumulating in said headblock and impeding the movement of said adjustable knee unit.

BACKGROUND OF THE INVENTION

Field of the invention

The present invention pertains to lumber sawmills of the type used for sawing logs into boards or planks, and more specifically to the so-called headblock and knee assembly which is an integral part of a sawmill carriage.

Description of the prior art

In conventional sawmill carriages a plurality of upright knee members are slidably mounted in and project upwardly from and in right angular relationship to horizontal headblocks upon which the log to be sawed is rested, the function of said knee members being to abut against and maintain said log in proper position as it moves into engagement with the saw. After a board or plank has been sawed from the log the carriage is returned to its starting position and said knees shifted a predetermined distance to re-position the log for the next cut, depending upon the desired thickness of the board. Unfortunately, with such slidable knee units there is unavoidable friction and power loss during their adjustment, and there is uneven wear on said headblock and knee members which frequently causes said knee to become misaligned from the true vertical, resulting in imperfect or so-called "out of square" boards.

As far as applicant is aware, no one has heretofore employed a wheeled knee unit within a sawmill carriage headblock, in contrast to conventional sliding type knee units, nor has anyone utilized applicant's means for purging sawdust and wood particles from the assembly during operation, as will be hereinafter described.

SUMMARY OF THE INVENTION

The present invention provides a novel and improved headblock and knee assembly for a sawmill carriage wherein the log-positioning knees are mounted on wheels or rollers to permit their free rolling movement within the headblocks, in contrast to conventional sliding knee members. The reduced friction lessens the power requirements and also substantially lessens wear on said relatively movable parts, thus ensuring that said headblock and knee members are maintained in right angular relationship to provide true and accurate sawed boards.

A further feature of the invention is that said knee unit rollers are provided with annular V-shaped grooves therein to accommodate sawdust or wood particles accumulating in said headblocks, and are self-cleaning to

prevent such particles from impeding the travel of said knee unit. In addition, scraper bars are also provided on said movable knee unit to continuously purge larger wood chips and the like to further ensure the smooth travel of said unit.

Still further important objects of the present invention are to provide a novel and improved headblock and knee assembly for sawmill carriage which is relatively simple in design and construction, which is reliable in operation, and which is otherwise particularly well adapted for its intended purposes.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings, wherein the same reference numerals designate the same or similar parts in all of the views:

FIG. 1 is a simplified perspective view of a sawmill carriage, the novel headblock and knee assembly comprising the invention being indicated in full lines and the associated carriage structure being shown in dot and dash lines;

FIG. 2 is a perspective view of the wheeled knee unit featured in the invention;

FIG. 3 is an enlarged side elevational view of the headblock and knee assembly, with a part of said headblock broken away to show the knee unit base therein; and

FIG. 4 is an end view, looking into the forward end of said channel-shaped headblock, showing the wheeled knee unit mounted therein.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As is shown in FIG. 1, the complete sawmill assembly of which the present invention is a part includes a carriage 10 having wheels 11 designed to ride on parallel tracks 12, and mounted on and extending transversely across said carriage are a plurality of channel-shaped headblocks 13 upon which the log 14 to be sawed is positioned, said log being rested against two or more upright knee members 17. The number of headblocks and knees utilized can be varied, depending upon the size and style of the sawmill, and the invention is not to be limited in this respect. Suitable hydraulic drive means or other means for driving the carriage are provided for moving said log into engagement with a high speed rotary saw 16, and as said blade traverses the length of said log it functions to cut a board or plank therefrom. The entire assembly is preferably of welded steel construction, and can be either portable or permanent, as desired.

After the initial cut the carriage 10 and log are returned to the illustrated position, and the knee members 17 are moved forwardly a predetermined distance, depending upon the desired thickness of the next board to be cut. Interconnected rack and pinion members 18, 19 or other suitable adjustment means are provided for shifting said upright knee members 17, said adjustment being controlled by an operator, and in conventional headblock and knee assemblies the base portions of said knee members are merely slidably housed within the channel-shaped headblocks. Unfortunately, and as hereinabove mentioned, with such conventional headblock and knee units there is unavoidable friction between said relatively movable parts which not only increases the power requirement, but which also causes considerable wear on said parts. Moreover, it has been found that the wear on said relatively movable members develops unevenly, with the predominant wear occurring adjacent the forward end of the knee unit. The result is that the upright portions 21 of said knee units are biased from their right angular relationship to the headblock, which relationship is critical in order to produce boards of uniform thickness and which are not "out of square."

It is to eliminate this shortcoming of conventional sawmill carriage headblock assemblies that the novel unit comprising the present invention has been designed.

With reference now to FIGS. 2-4 of the drawings, it will be seen that the knee unit featured in the present invention, which is designated generally by the numeral 17, includes a vertical leg member 21 which is rigidly welded or otherwise secured to a base 24, there being a brace or reinforcing element 22, and a bracket 20 (FIG. 2) may be provided for the attachment of the adjustment rack 18. The forward vertical edge of said upright leg member is preferably flanged as at 23 to provide a flat surface against which a log can be positioned.

The base portion 24 of said knee unit is an elongated and relatively narrow upright member, as shown, and is provided with forward and rearward axles 26, 27, upon which there are mounted wheels or rollers 28 and 29, respectively, a set of said rollers being mounted on each side of said base. As best appears in FIG. 4, each of said rollers includes a pair of spaced, beveled annular grooves 31, there being flat, surface-engaging portions therebetween, which grooves have an important function in the operation of the present invention, as will be hereinafter seen. Supported by and depending from said base member 24 immediately in front of the forward wheels or rollers 28 is a scraper bar 33. Said bar extends across the width of said base unit and projects downwardly to a point spaced just above the bottom surface of the headblock, and a similar scraper bar 34 is mounted immediately rearwardly of the rollers 29 at the opposite end of said base member.

As is shown in FIGS. 3 and 4, the wheeled base portion 24 of the knee unit in the present invention is mounted within the channel-shaped headblock 13, said headblock being channel-shaped and generally rectangular in cross section (FIG. 4), and being precision machined for close internal tolerances, as there doesn't have to be any allowance made for sliding and canting of the knee unit therein, as in conventional headblock assemblies. Said headblock 13 is mounted on a suitable base 36 and includes a longitudinal slotted opening 37 in its bottom wall and a longitudinal top opening 38 through which the upper portion of said member 24 projects. As will be seen in FIG. 4, the rollers 28 (as well as the rearward rollers 29) are designed to fit closely but rotatably within said channel-shaped headblock, and the scraper bars 33, 34 span substantially the entire internal dimension of said headblock.

In the operation of the novel headblock and knee assembly comprising the present invention, after a log 14 has been positioned on the horizontal headblocks 13, which may be accomplished by means of an automatic conveyor system or any other suitable means, the movable knee units are adjusted and set so that the upright knee portions 21 bear against said log and locate the same relative to the saw 16 so that a board of desired thickness will be cut from said log as the carriage traverses said saw. As hereinabove mentioned, operator-controlled hydraulically-powered rack and pinion units 18, 19 can be used for this purpose, although other adjustment mechanisms can also be employed and the invention is by no means to be limited in this respect.

After each succeeding longitudinal cut of the log said knee units 21 must be advanced a short distance, of course, to reposition the log for the next pass through the saw. The result is that when a quantity of logs is being sawed, as is frequently the practice, conventional sliding type knee units are subject to considerable friction and wear, with the undesirable effects hereinabove enumerated. With the roller action provided by the present invention, however, such friction and wear is substantially eliminated. Moreover, because of their continuous rolling movement during adjustment of the knee members, any wear that does occur on said rollers is distributed evenly, thus preventing misalignment of the knee

upright portions 21 and ensuring boards of uniform squareness and quality.

As will be readily appreciated, during the sawing operation it is unavoidable that sawdust and wood particles constantly find their way into the channel-shaped headblocks 13. Heretofore the accumulation of such foreign material within the headblocks tended to impede the sliding movement of the knee unit therein, and was a source of considerable trouble and annoyance. With the novel knee unit comprising the present invention, however, as the base portion 24 thereof moves forwardly within the headblock the scraper bar 33 at the forward end of said base functions to sweep the larger wood particles and chips out of said headblock, and on the return travel of said knee unit the scraper bar 34 at the opposite end of the base performs the same function, thus continuously purging the unit of said wood chips.

With respect to sawdust and finer wood particles accumulating in said headblock, the novel tapered annular grooves 31 in the rollers 28, 29 are designed to force said particles into narrow windows permitting said grooved rollers to pass easily thereover. As said roller grooves become filled and the rollers pass over more particles the later force the previously-retained particles out of said grooves, thus providing a continuous self-cleaning action which promotes the smooth operation of the knee unit within the headblock.

From the foregoing detailed description it will be seen that the present invention provides a novel headblock and movable knee assembly for lumber sawmill carriages having several important advantages over prior structures intended for the same purpose. In the present invention the adjustable log-positioning knees are mounted on wheels or rollers which permit their free rolling movement within the headblock, in contrast to the sliding knee units employed in conventional sawmill carriages. The result is reduced friction and power requirements and also substantially less wear on said relatively movable parts, thus ensuring that said headblock and knee members are maintained in right-angular relationship to prevent sawed boards that are "out of square."

A further feature of the invention is that said knee unit rollers are provided with annular V-shaped grooves to accommodate sawdust and wood particles accumulating in the headblocks, and cooperating scraper bars are provided at the ends of said movable knee units to continuously purge the larger wood particles and chips from said headblocks.

It is to be understood that while a preferred embodiment of the present invention has been illustrated and described herein, numerous variations or modifications thereof are possible. What is intended to be covered herein is not only the illustrated form of said invention but also any and all variations or modified forms thereof as may come within the spirit of said invention, and within the scope of the following claims.

I claim:

1. In a sawmill carriage including a horizontal channel-shaped headblock having a flat bottom wall portion and a flat top wall portion with a slotted opening therethrough, said headblock being adapted to have a log rested transversely thereacross, including a knee unit with a base movably carried in said headblock and a leg projecting upwardly through said top wall opening in right angular relationship to said headblock engageable against a log positioned on said headblock, and including power means for moving said knee unit longitudinally of said headblock to shift the position of a log engaged by said upright leg, the improvements comprising: a knee unit base mounted within said channel-shaped headblock having a forward end and a rearward end; rollers mounted on opposite sides of said knee unit base member, said rollers riding on the flat bottom portion of said channel-shaped headblock; peripheral grooves formed in said rollers adapted to receive and temporarily retain wood particles

5

accumulated on the bottom of said headblock interior to promote the smooth, unimpeded rolling movement of said knee unit base within said headblock; an elongated slotted opening in the flat bottom portion of said channel-shaped headblock through which wood chips can be evacuated from the headblock interior; laterally-extending scraper bar means on said knee unit base substantially spanning the side walls of said headblock and adapted to sweep wood particles from the interior of said headblock during travel of said knee unit to further promote the unimpeded movement thereof.

2. The sawmill headblock and movable knee assembly recited in claim 1 and wherein said roller peripheral grooves are beveled to provide self-cleaning action as wood chips accumulate therein.

3. The sawmill headblock and movable knee assembly recited in claim 1 wherein said rollers are closely rollably fitted within said channel-shaped headblock to maintain

6

said knee unit upright leg in right-angular relationship to said headblock.

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U.S. Cl. X.R.

143—124; 308—6