The present invention relates to sawmills and more particularly to a sawmill feed device.

A sawmill husk normally includes a rectangular-like reciprocating platform or carriage mounted on parallel wheel-like rollers or bearings so that the carriage may support a log and progressively move the log toward a rotating circular saw and be returned to a subsequent saw engaging position. This to and fro or reciprocating moving of the carriage is normally accomplished by a gear train or transmitted means interconnecting a prime mover with the carriage. The transmission means normally wears rapidly and is expensive to maintain.

It is, therefore, the principal object of this invention to provide a feed works or sawmill drive means to impart reciprocating movement to the log holding carriage which replaces the conventional power transmission means.

Another object is to provide a sawmill feed wherein friction rollers are moved into contact with a portion of the carriage for moving the latter.

Still another object is to provide a sawmill feed device which will reciprocate a sawmill carriage and wherein the device is normally returned to a neutral or out-of-drive position when manually released.

The present invention accomplishes these and other objects by connecting a U-shaped channel to the supporting surface of the sawmill carriage and mounting a frame below the carriage. The frame is provided with a plurality of transverse drive shafts each having a friction roller at one end disposed between the legs of the channel. A lever and linkage control vertically reciprocates the frame to engage the friction rollers with the legs of the U-shaped channel.

Other objects will be apparent from the following description when taken in conjunction with the accompanying two sheets of drawings, wherein:

FIGURE 1 is a perspective view of the device in operative position;

FIGURE 2 is a vertical cross-sectional view taken substantially along the line 2—2 of FIG. 1 and illustrating, in elevation, the relative position of a sawmill carriage;

FIGURE 3 is a horizontal cross-sectional view, partially in elevation, taken substantially along the line 3—3 of FIG. 2; and

FIGURE 4 is a vertical cross-sectional view, partially in elevation, taken substantially along the line 4—4 of FIG. 2 with the carriage removed.

Like references designate like parts in those figures of the drawings in which they occur.

In the drawings:

The reference numeral 10 indicates a conventional sawmill carriage comprising a platform 12 having means 14 at one side thereof for gripping and holding a log 16 to be cut when moved toward a circular saw, not shown. The carriage 10 is supported by rollers 18 mounted on tracklike supports 20.

The numeral 25 indicates the sawmill feed device, as a whole, which is substantially rectangular in general configuration. The device 25 is preferably mounted in a suitable pit or recess, not shown, between the track supports 20 and below the carriage 10. The device 25 comprises a frame 26 having vertical end plates 28 and 30 joined at their upper ends by a pair of horizontal laterally space-apart top plates 32. The top plates and end plates are joined respectively to a pair of side members 34 and 36 which are substantially inverted T-shaped. The inverted T-shaped side members 34 and 36 have downwardly converging edge surfaces each terminating in a central depending aperture 38 and 40, respectively, for the purposes presently explained.

A central or main drive shaft 42 extends transversely of and beyond the sides of the frame 26 above the top plates 32 and is journaled by pillow-block bearings 44. One end of the shaft 42 is coaxially connected to a friction roller 46. The other end of the shaft 42 is provided with sprockets 48 which are connected to a prime mover, not shown, by chains 50. A pair of auxiliary drive shafts 52 and 54 are similarly mounted transversely of the top plates 32 by bearings 56 and 58, respectively, parallel with respect to the central drive shaft 42. The shafts 52 and 54 project laterally of the frame side member 36, equidistant with respect to the drive shaft 42, and are similarly coaxially connected to friction rollers 60 and 62 respectively. The friction rollers 46, 52, and 54 are preferably cylindrical. Intermediate its ends the shaft 42 is provided with a pair of sprockets 64 aligned respectively with sprockets 66 and 67 secured, respectively, to the shafts 52 and 54. A pair of endless chains 68 and 70 respectively entrained around the sprockets 66 and 67 and a respective one of the pair of sprockets 64 connect the shafts 52 and 54 to the drive shaft 42 for rotation therewith.

Friction plate means 70 is attached to the carriage 10. The means 70 comprises an elongated U-shaped channel member having its legs 72 and 74 disposed horizontally.

The channel member 70 is longitudinally connected to the depending surface of the carriage platform 12 so that the upper leg 72 of the U-shaped member is positioned above the friction rollers 46, 60 and 62 while the lower leg 74 is disposed below the rollers. The spray drive shafts 52 and 54 of the U-shaped member is greater than the diameter of the friction rollers so that they are freely received therewith and may be positioned in a neutral position as hereinafter described.

The chains 50, driving the shaft 42, thus rotate the three friction rollers 46, 60 and 62 in the same direction which in turn moves the U-shaped member 70 and carriage 10 in one direction or the other depending upon whether the friction rollers are in driving contact with the inner surface of the leg member 72 or 74.

The feeding device 25 is raised or lowered to accomplish the friction driving contact between the friction rollers and the legs of the U-shaped member by a lever and linkage means indicated generally at 75 (FIGS. 2 and 3). A lifting shaft or axle 76 is journaled by bearings 78 mounted on a suitable base or support, indicated by the line 80, transversely of and in depending relation with respect to the side plates 34 and 36. Two pairs of links or ears 82 and 84 are horizontally connected, respectively, to the axle 76, adjacent its ends, and are pivotally connected at their other ends to the respective depending projection 38 and 40 of the frame side members 34 and 36 by pins 86. One end portion of the axle 76 is spirally provided with a pair of upstanding ears 88 which are pivotally connected at their free ends to one end of a horizontally extending link 90. The other end of the link 90 is pivotally connected to one arm of a bell crank 92. The fulcrum of the bell crank is connected to a vertically disposed rod 94 journaled by bearings 96 mounted on vertically spaced suitable supports 98. A control lever or handle 100, positioned laterally of the carriage 10, is pivotally connected at its depending end between plates 102.
below the operator's platform 104 for movement of its upper end portion toward and away from the carriage 10. Adjustable linkage, such as a turn buckle 106, connects the depending end portion of the lever 100 to the other arm of the bell crank 92. Thus when the lever 100 is moved toward the carriage 10 (FIG. 2) the bell crank 92, through the link 90 and ears 88 rotates the axle 76 clockwise, as viewed in FIG. 4, to lower the feed device 25 so that the friction rollers engage the leg 74 of the U-shaped member to move the latter in one direction. Similarly when the lever 100 is moved in the other direction the bell crank and link 90 pivot the axle 76 in the other direction to raise the friction rollers into contact with the leg 72 of the U-shaped member to drive the latter in the other direction.

The feed device 25 is counterbalanced toward a neutral position so that the friction rollers do not contact either of the leg members 72 or 74. This is accomplished by a channel iron arm 108 which is rigidly connected horizontally at one end to one end portion of the axle 76. The arm 108 is parallel with the frame side 36 and projects beyond the frame end 28 (FIG. 4). The free end of the arm 108 is connected by a tension spring 110 to a suitable support 112 by a bolt and eye 114 thus permitting the tension spring 110 to be adjusted for positioning the feed device 25 in neutral or non-driving position.

The upper surface of the frame 26, formed by the top plates 32, is maintained parallel with respect to the horizontal planes defined by the legs of the U-shaped member 70 to prevent any tilting action of the frame 26 by fixed position guide members, indicated generally by the numeral 115, at each end of the frame. The frame guide members 115 each comprise a horizontal plate 116 and a vertical plate 118 integrally connected in right angular relation. The vertically disposed plate 118 contacts a shaft-lik roller 120 journeled by bearings 122 connected to the outer surface of the respective end plates 28 and 30. Thus when the frame 26 is raised and lowered by the lifting means 75 the shaft-like rollers 120 contacting the respective vertical guide plate 118 prevents any tilting movement of the frame.

Carriage hold-down means comprising an idling shaft 130 is transversely mounted on the upper end portion of one of the vertically disposed plates 118 by bearings 132. One end of the idling shaft 130 is axially connected to a roller 134 within the channel member 70 in contact with the upper surface of the lower channel member leg 74.

**Operation**

In operation the feed device 25 is installed as described hereinabove. The upper end portion of the lever 100 is moved toward the carriage 10 which pivots the bell crank 92 and rotates the axle 76 clockwise, as viewed in FIG. 4, to lower the frame 26 and engage the friction rollers 46, 60 and 62 with the upper surface of the U-shaped member leg 74. This moves the carriage 10 so that the log 16 will be cut by the rotating saw, not shown. When the log has been moved beyond the circular saw, the lever is pivoted away from the carriage wherein the bell crank 92 and link 90 rotate the axle 76 in an opposite direction which raises the frame 26 and frictionally contacts the rollers 46, 60 and 62 with the lower surface of the U-shaped member leg 72 which returns the carriage 10 to its starting position. The hold-down roller 134 resists any lifting of the carriage 10 by the friction rollers when contacting the leg 72. This completes one cycle of operation.

When the lever 100 is manually released, gravitational attraction for the device 25 tends to lower it with respect to the U-shaped member 70 but the tension spring 110 is adjusted to compensate for the mass of the device to normally maintain it in a neutral position wherein the friction rollers maintain a point of contact with either of the U-shaped member legs 72 and 74.

Obviously the invention is susceptible to some change or alteration without defeating its practicability, and I therefore do not wish to be confined to the preferred embodiment shown in the drawings and described herein, further than I am limited by the scope of the appended claims.

1. A feed mechanism for a sawmill husk having a carriage mounted for horizontal to and fro movement above a support, comprising: friction plate means connected to the depending surface of said carriage; a frame member positioned below said carriage; shaft means extending transversely of said frame; friction rollers at one end of said shaft means and releasably contacting said friction plate means; means for rotating said shaft means; and lifting means for raising and lowering said frame.

2. Structure as in claim 1 in which the friction plate means comprises an elongated U-shaped member extending longitudinally of said carriage, said U-shaped member having its respective leg members disposed horizontally above and below said friction rollers.

3. Structure as specified in claim 2 in which said shaft means includes a plurality of parallel drive shafts, bearings mounted on said frame and journaling said drive shafts, at least one of said drive shafts, projecting beyond said frame opposite said friction rollers, a first chain and sprocket means connecting said one of said drive shafts with a source of power, and other chain and sprocket means interconnecting said plurality of drive shafts.

4. Structure as specified in claim 3 in which said lifting means comprises an axle extending transversely below said frame, bearings mounted on said support and journaling said axle for rotation about its longitudinal axis, at least one pair of ears secured at one end to said axle and pivotally connected, at their other ends, to said frame; and lever means extending laterally of said frame and connected with said axle for rotating the latter.

5. Structure as specified in claim 4 in which said lever means comprises a vertical lever pivotally mounted at its depending end on said support for movement of its upper end portion toward and away from said frame; a bell crank fulcrummed on said support and interposed between said lever and said axle; and links interconnecting said bell crank with said axle and said lever.

6. Structure as specified in claim 5 and frame counter balancing means comprising an arm horizontally secured at one end to said axle for vertical movement of its free end portion about the axis of said axle, and a spring connecting the free end of said arm with said support.

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