Nov. 13, 1951 G. A. JOHNSON 2,574,974

PORTABLE SAWMILL

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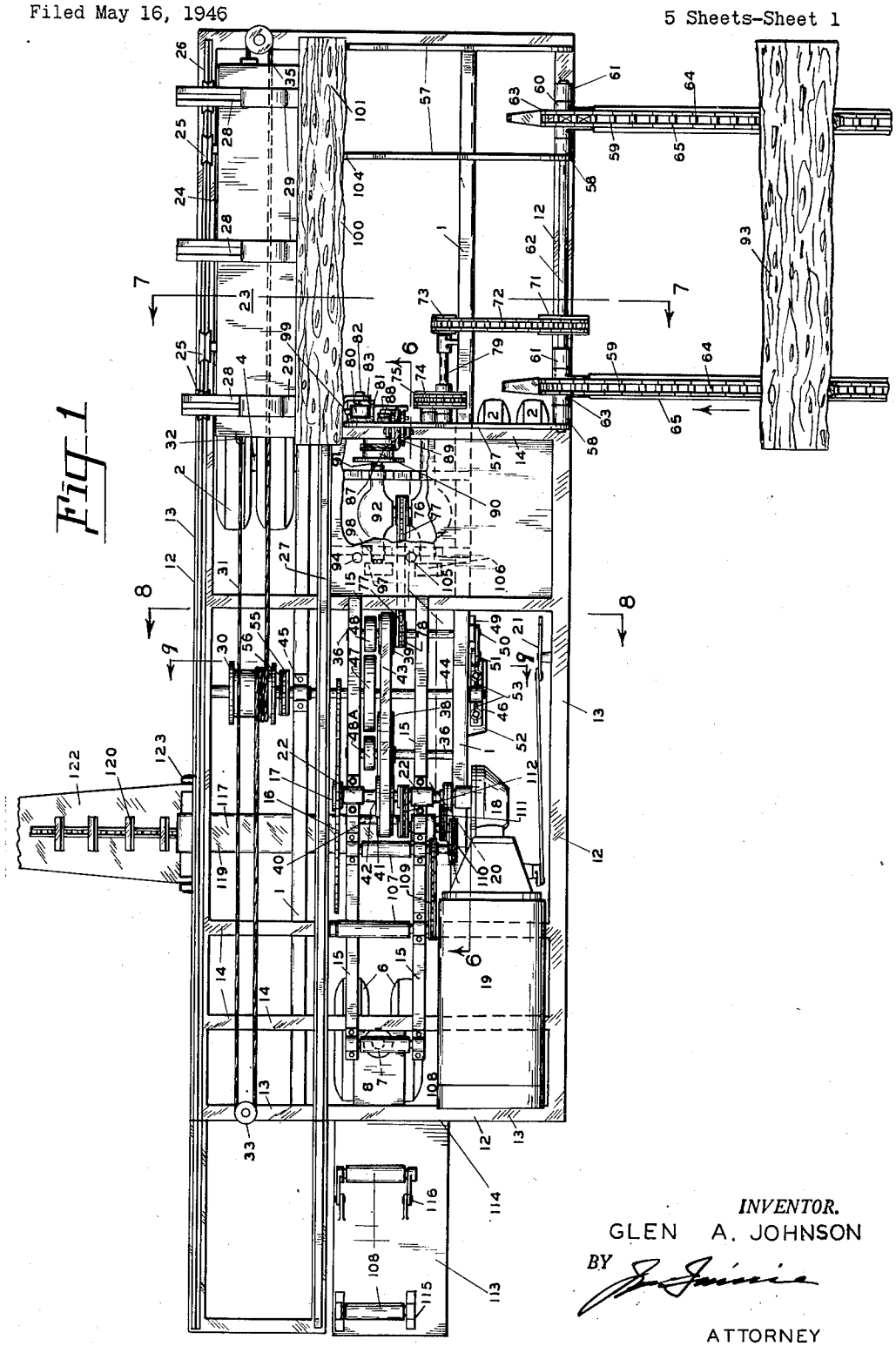


Fig. 1

INVENTOR.
GLEN A. JOHNSON
BY
ATTORNEY

Nov. 13, 1951 G. A. JOHNSON 2,574,974

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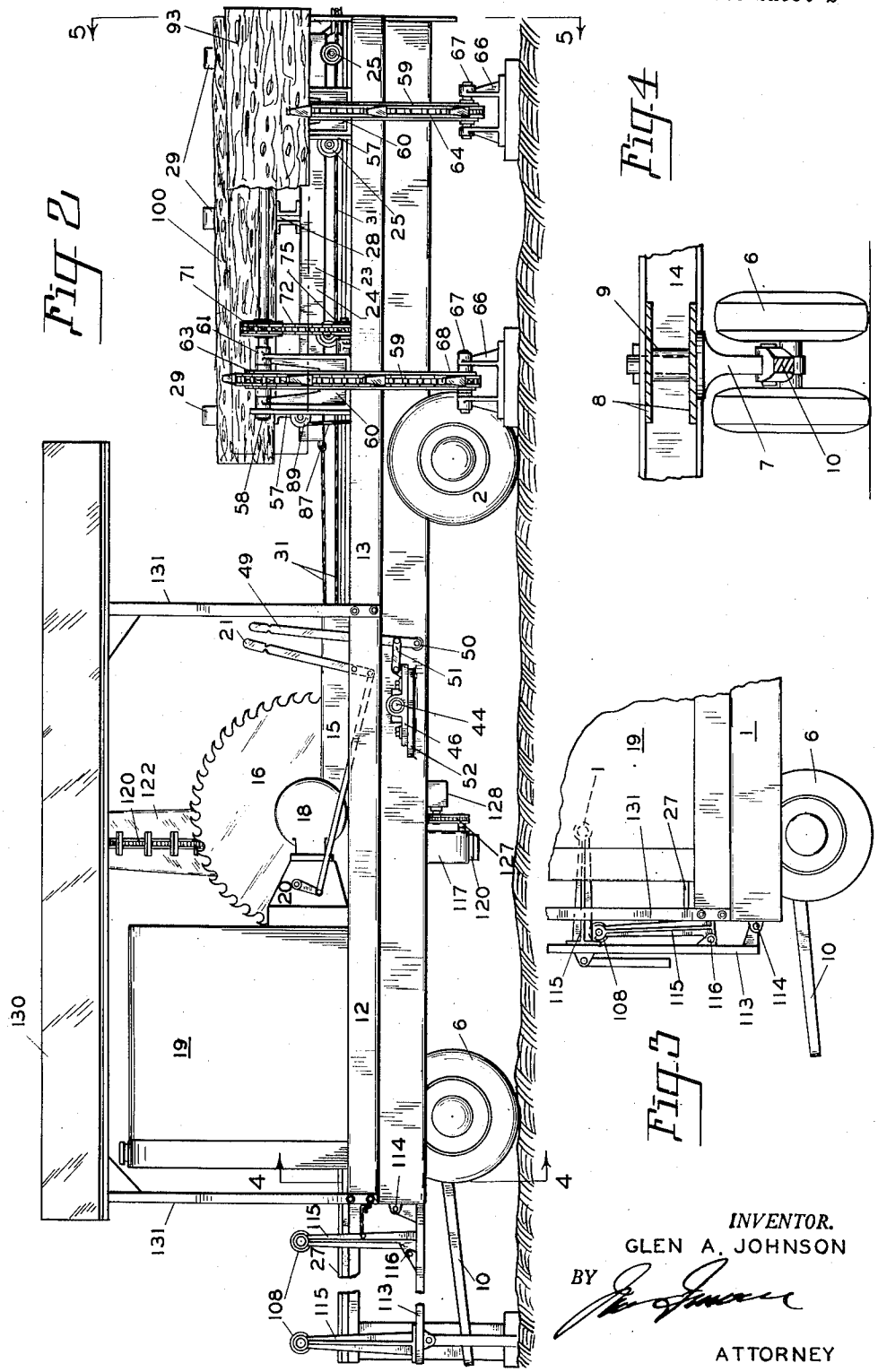


Fig 2

Fig 4

Fig 3

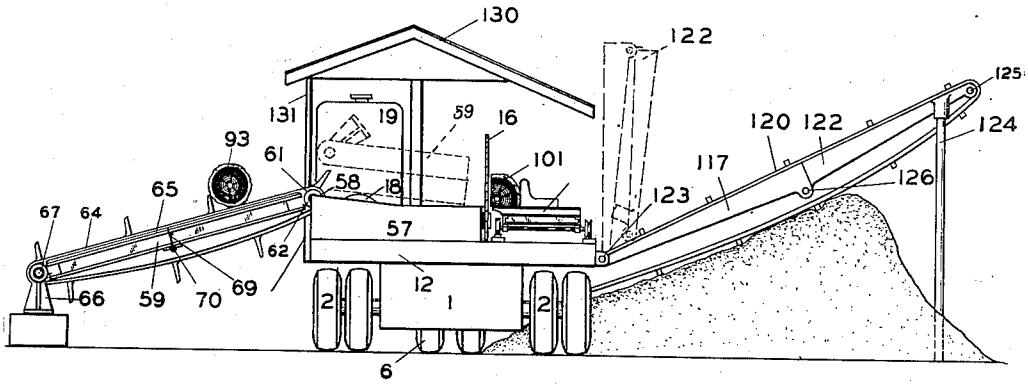
INVENTOR.
GLEN A. JOHNSON
BY
ATTORNEY

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Fig 5



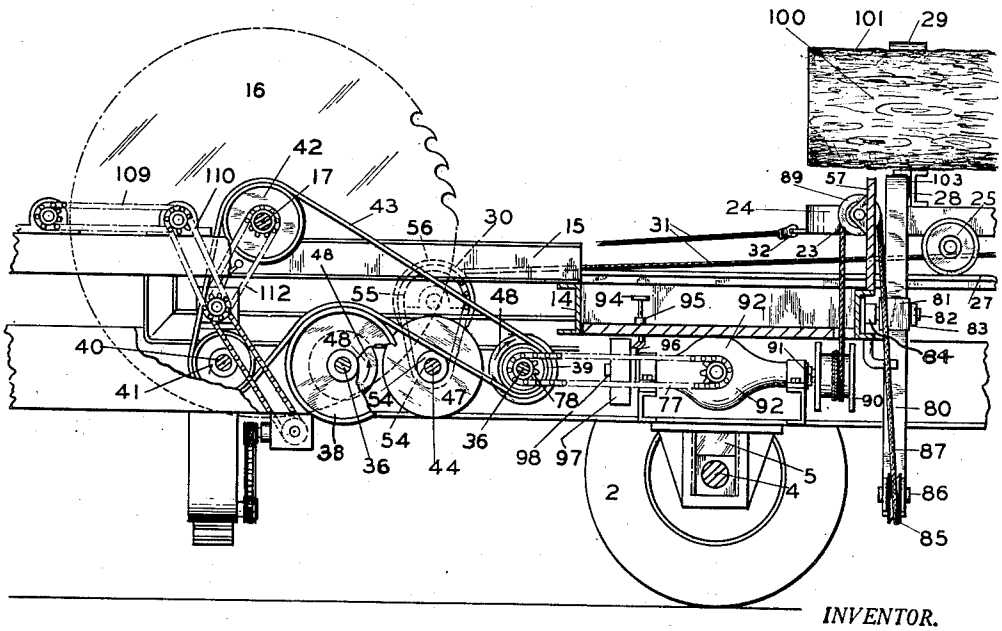


Fig 6

INVENTOR.
GLEN A. JOHNSON
BY

ATTORNEY

Nov. 13, 1951 G. A. JOHNSON 2,574,974

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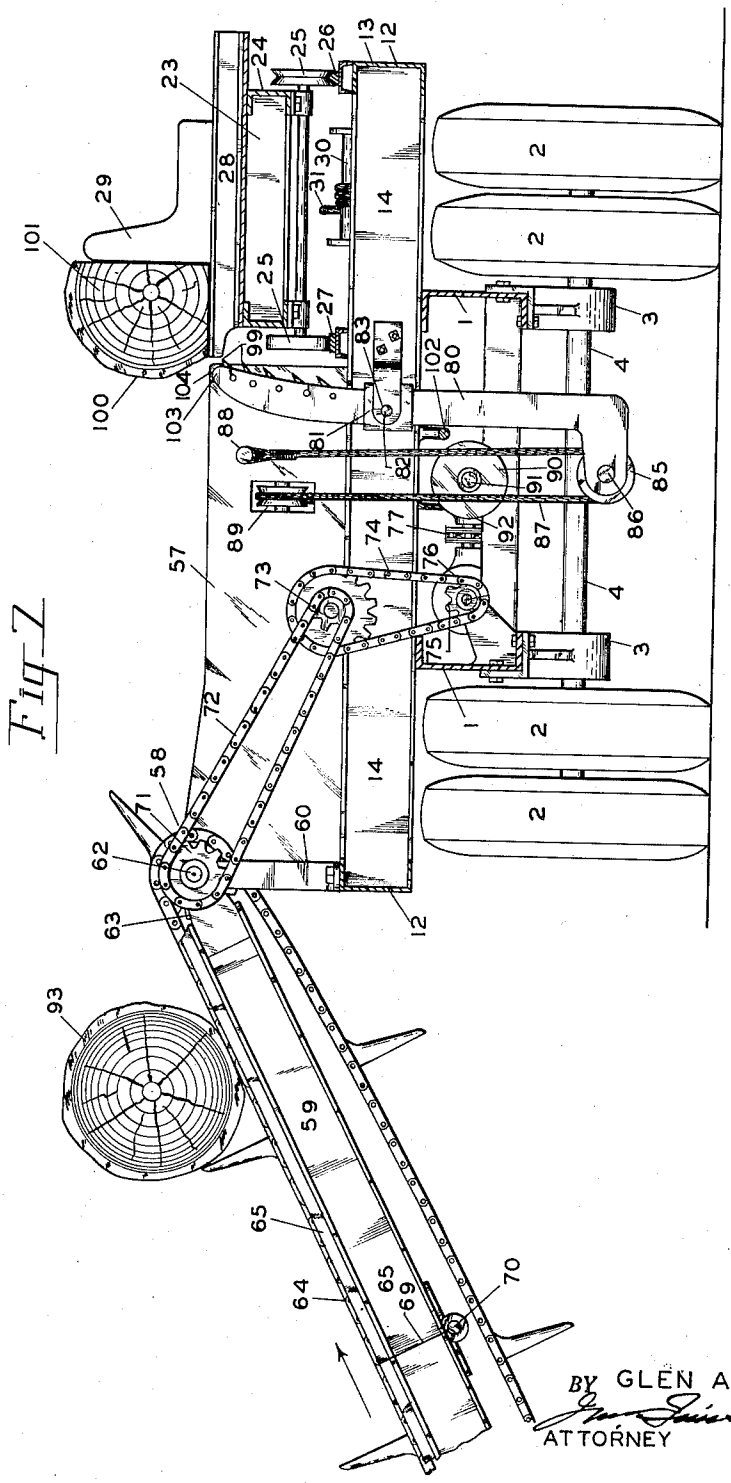


Fig 7

INVENTOR.

BY GLEN A. JOHNSON

ATTORNEY

Nov. 13, 1951 G. A. JOHNSON 2,574,974

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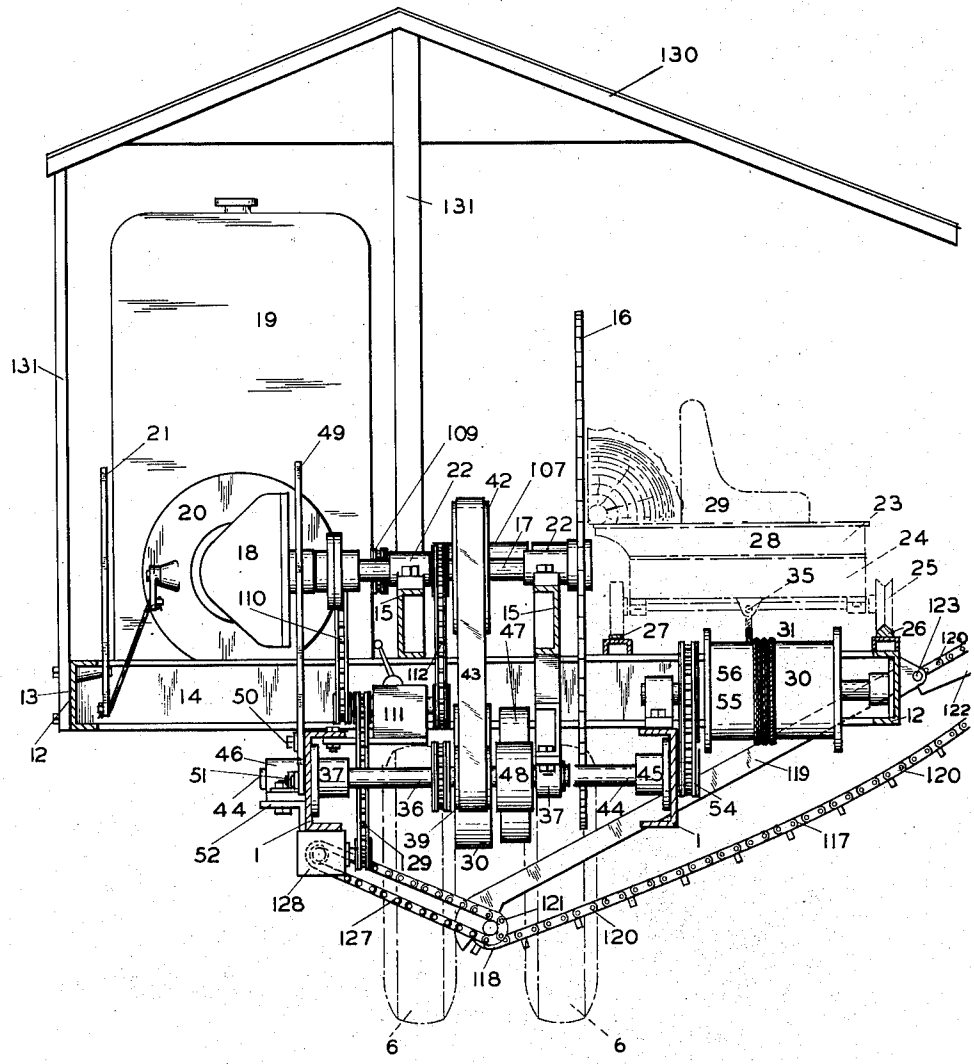


Fig 8

INVENTOR.
GLEN A. JOHNSON

BY

ATTORNEY

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PORTABLE SAWMILL

Glen A. Johnson, Tenino, Wash.

Application May 16, 1946, Serial No. 670,146

1 Claim. (Cl. 143—43)

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This invention relates to sawmills and is particularly adapted to portable mills.

The primary object of the invention is to mount a complete mill, including a head rig, carriage, deck chains, sawdust elevator and the complete power plant upon a single framework which is mounted upon wheels or skid supports, preferably a three wheeled type of truck.

In the moving of my new and improved sawmill the deck chains fold up on the truck frame, also the sawdust conveyor, together with extension conveyors associated with the mill.

My new and improved sawmill is mounted upon rubber tired wheels permitting the moving of the mill over highways and the like to other points. The mill on moving need not be dismantled or torn down, which is a costly operation in most forms of portable sawmills.

In the construction of my new and portable sawmill I have used standard sawmill equipment, power plant and supporting wheels. I have arranged the assembly of the different machines so that one man can operate the sawmill.

These and other incidental objects will be apparent in the drawings, specifications and claim.

Referring to the drawings:

Figure 1 is a plan view of my new and improved portable sawmill. In this view I remove the roof to better illustrate the various units making up the mill.

Figure 2 is a side elevation of Figure 1.

Figure 3 is a fragmentary detail illustrating the method of folding the lumber conveyor.

Figure 4 is a sectional view, taken on line 4—4 of Figure 2, looking in the direction indicated, and illustrating the method of mounting the front supporting wheels.

Figure 5 is an end view of the mill, taken on line 5—5 of Figure 2 illustrating the log deck conveyors, the chain arrangement and especially the sawdust conveyor, the dotted lines indicating how these conveyors are folded while the mill is being moved.

Figure 6 is an enlarged fragmentary sectional view, taken on line 6—6 of Figure 1, illustrating the friction drive for moving the carriage, and the mechanism for operating the log turner.

Figure 7 is an enlarged end sectional view, taken on line 7—7 of Figure 1, especially illustrating the operation of the log turner and the deck conveyors.

Figure 8 is an enlarged end sectional view, taken on line 8—8 of Figure 1.

In the drawings:

My new and improved portable sawmill consists of a main frame 1, having one of its ends mounted upon wheels 2 by the mounting blocks 3 (Fig. 7) cooperating with the cross axle 4. The mounting blocks 3 may have a resilient member, such as a rubber block 5 (Fig. 6) for absorbing road shocks and the like. The opposite end of the frame 1 is mounted upon the wheels 6.

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The wheels 6 are located centrally of the frame of the mill and are journalled to the pedestal 7, which is journalled within the cross frames 8 and supporting bearing 9, as shown in Fig. 4. A tongue 10 is pivotally mounted to the pedestals 7 at 11 and can be hooked to a tractor for moving the mill. I have found that a three wheeled supporting main frame 1 provides greater maneuverability in close places than a four wheeled supporting gear, although I do not wish to be limited to a three wheeled arrangement.

Mounted upon the main frame 1 is a supporting frame 12, which overhangs the frame 1 providing a base for the various units of sawmill equipment. The frame 12 consists of the main border channels 13 and intermediate cross beams 14. Mounted upon the cross beams 14 forward and centrally of the frame 13 are longitudinally mounted supporting channels 15. These channels are especially provided for supporting the head rig assembly consisting of a circular saw 16 mounted to the arbor 17 in the usual manner and driven by the gear box 18, which is mounted to the power plant 19.

The gear box 18 may be disengaged from the power plant 19 through the action of a clutch within the housing 20 and operated by the control lever 21. The arbor is mounted within suitable bearings 22 which are bolted to the channels 15.

The log carriage is indicated at 23 and is of any well known type of construction, consisting of a main frame 24 having the usual supporting wheels 25 operating on the tracks 26 and 27. The blocks 28 are mounted to the frame 24 and have the usual knees 29 operating thereon. I have not illustrated any particular operating mechanism, as any well known type of operating mechanism can be used.

The carriage 23 is operated along the tracks 26 and 27 by the drum 30 and cables 31. This is a well known principle wherein the cable is secured to the carriage at 32 and trained around the idler pulley 33, which is fixedly secured to the frame 13, thence around the drum 30 and to the opposite end of the carriage at 35.

I will now describe the method I use for operating the drum 30, which is a well known method, consisting of a friction drive. This fric-

tion drive in my assembly consists of two countershafts 36 mounted in suitable bearings 37 within the main frame 1 of the machine. Drive pulleys 38 and 39 are keyed to these countershafts. A cross shaft 40, having an idler pulley 41 mounted thereon is also mounted within the frame 1. Mounted and keyed to the arbor 17 is a drive pulley 42. This drive pulley drives the countershafts 36 by the belt 43 which is trained about the drive pulley 42, pulleys 38 and 39 and the idler pulley 41, as shown in Fig. 6. A shaft 44 is journalled at one end within the bearing 45 mounted to the frame 1. This bearing is a self-aligning bearing and provides for lateral movement of the shaft. The opposite end of the shaft 44 is journalled within the movable bearing 46 which is also a self-aligning bearing.

Mounted to the shaft 44 is a master wheel 47, which cooperates with the friction wheels 48 and 48A keyed to the shafts 36. The friction wheels 48 and 48A are rotating continuously and when the master wheel 47 is brought in frictional contact with either of these wheels the shaft 44 is revolved in a direction depending upon which of the friction wheels the master wheel engages.

The movement of the master wheel 47 and the shaft 44 is governed by the control lever 49, which is pivotally mounted at 50 and has the connecting rod 51 pivotally connected to the bearing 46 as shown in Fig. 2. The bearing 46 is mounted to the base 52 so that it can move along the slots 53 as shown in Fig. 1. It will be noted that the friction wheels 48 and 48A drive in opposite directions to one another.

The drum 30 is driven by the shaft 44 through the sprockets 54, chain 55 and the sprocket 56. The drum 30 is rotated in one direction to bring the carriage past the saw from the position shown by the broken lines and rotated in the opposite direction to return the carriage to the starting position. This is accomplished by moving the lever 49 so as to bring the master wheel 47 either in contact with the friction wheel 48 or 48A. It will be noted that the friction drum 48 is driven in the opposite direction to that of the friction drum 48A. This provides for a reversing of the drum 30 and is of well known practice.

The friction drum 48 travels at a higher rate of speed than the drum 48A due to the differences in diameters of the pulleys 38 and 39. This provides for the moving of the carriage at a relatively slow speed towards the saw while increasing its speed on the return to the loading position.

I will now describe the operation of the log deck conveyors and the log turner. Referring to Figure 7, deck skids 57 are mounted upon the cross members 14 of the frame 12. Pivotally mounted to the outer ends 58 of the skids are the log decks 59. The decks 59 consist of supporting pedestals 60 mounted to the frame 12, having bearings 61 (Fig. 1) formed on their upper ends through which the cross shaft 62 is journalled. Drive sprockets 63 are keyed to the shaft 62 and have the chains 64 trained therearound. The chains 64 are supported by beams 65 which in turn are supported by the extensions 65A having bearings 65B, as best illustrated in Figures 2 and 5. The lower outer or free ends of the chain assemblies and decks 59 rest on the pedestal 66 through the stub shafts 67 as shown in Figs. 2 and 5. The stub shafts 67 remain stationary, while the lower sprocket 68 revolves thereabout. The beams 65 of the log deck chain assembly are broken midway their lengths at 69 and are connected by a hinge 70. This allows them to be folded to the dotted position shown in Figure 5.

A sprocket 71 is keyed to the shaft 62 and is driven by the chain 72 from the sprocket 73 as shown in Fig. 7. The sprocket 73 is driven by the chain 74 through the shaft 79, sprocket 79A and from the sprocket 75. The sprocket 75 is keyed to the differential assembly 76 which is a standard rear axle of an automotive vehicle. This differential assembly is driven by a chain 77 from the sprocket 78 (Fig. 6) keyed to the counter shaft 36 of the friction drive and therefore, this chain 77 is driven continuously.

The log turner consists of a vertical bar 80 (Figs. 6 and 7), which is slidably mounted within the guide 81. The guide 81 has stub shafts 82 forming part thereof and journalled in the bearings 83 and 84, said bearings forming part of the frame 14. The guide 81 permits the bar 80 to oscillate in its operation. A sheave 85 is journalled at 86 to the lower end of the bar 80, and has the cable 87 trained thereabout. The cable 87 is dead ended at 88 and runs over the idler pulley 89 and down to the drum 90. The drum 90 is mounted to the shaft 91 of a differential assembly 92 which also is driven continuously by the chain 77.

I will now describe the operation of the log turner bar 80. In order to operate the same the foot pedal 94 (Figs. 1 and 6) is pressed downwardly causing the plunger 95 to operate the brake operating lever 96, applying the brake (not here shown) within the drum 97. This brake assembly stops the rotation of the shaft 98 extending from the differential gears 92, thereby causing the shaft 91 to rotate and revolve the drum 90, winding the cable 87 thereabout and raising the bar 80. The bar 80 has the usual dogs 99 for engaging the side 100 of the log 101, and turning the same upon the blocks 28. As the bar 80 is raised the guide 81 pivots about its shafts 82 permitting the bar 80 to rock away from the blocks 28 as the log is turned thereon.

A stop 102 prevents the end 103 of the bar 80 from passing beyond the end 104 of the skids 57 in its operation. Upon releasing the foot from the pedal 94, the weight of the bar 80 causes it to gravitate to the starting position. In order to cause the deck chain 64 to travel in the direction of the arrow (Fig. 7) bringing the log 93 to the decks 57 the pedal 105 (Fig. 1) is pressed down to apply the brake assembly 106 and operate the differential 76 causing the sprocket 75 to be revolved thereby operating the chains 74 and 72 and the log deck chain 64.

After the log has been located on the carriage the friction clutch lever 49 is operated bringing the master wheel 47 into contact with the friction wheel 48A, this will cause the cable 30 to move the carriage past the saw 16, the slab or cant will then fall on the rollers 107 and 108, see Figs. 1 and 2. The rollers 107 are preferably live rollers geared together by the chain 109 and driven by the chain 110 from the transmission 111. The transmission 111 is driven from the arbor shaft 17 by the chain 112. See Fig. 6. The rollers 108 are dead rollers, two of which are mounted on the platform 113 where the lumber is removed from the mill. A man usually stands on the platform 113 at this point separating the lumber. The platform is pivotally mounted to the frame 1 at 114. Pedestals 115 rigidly support the outer roller 108, on the platform 113, whereas the inner roller 108 is pivotally mounted

to the platform at 116 so that it can be folded to permit folding of the platform 113, as illustrated in Figure 3, when the machine is being moved.

I have provided a special sawdust conveyor 117, the lower end 118 of this conveyor is located beneath the saw 16, as best illustrated in Figure 8. The conveyor consists of a tube 119 which is secured to the frame 1 and to the frame 12. A conveyor chain 120 passes through this tube and about the sprocket 121. A suitable framework 122 is pivotally mounted at 123 to the frame 12 adjacent the upper end of the tube 119. The outer or free end of the frame 122 is supported by a removable post 124 at higher level than the inner end thereof as shown in Fig. 5. The conveyor chain 120 is trained around the usual sprocket 125 at the upper end of the framework. The framework 122 is hingedly joined at 126 and folds to an upright position, as illustrated by the dotted position in Figure 5, while the machine is being moved. The conveyor chain 120 is driven by the belt or chain 127 from the gear box 128, which in turn is driven by the chain 129 from the transmission 111 heretofore described.

In the operation of this conveyor the sawdust is removed by the lower run of the chain 120 and piled on a sawdust pile as best illustrated in Figure 5. I have provided a roof or covering 130 which may be mounted upon uprights 131 for sheltering the mill. This covering may be made of any suitable material.

I will now describe the operation of the sawmill. When the mill is located on the site of operation the log deck conveyors 65 are unfolded to the outboard operative position, shown in full line in all of the views, from the inboard storage position, shown by broken lines in Figure 5. The sawdust conveyor framework 122 is arranged in the operative position shown in full lines from the storage position, shown by broken lines in Fig. 5, and the forward conveyor unit and platform 113 is lowered to operative position (Figs. 1 and 2) from inoperative position, shown in Figure 3. The mill is now ready to operate. The operator stands adjacent the levers 49 and 21, and the foot pedals 94 and 105 from where he can operate the log deck conveyor 64, as above described, together with the log turner 80 for placing the log and positioning it upon the carriage 23, and from this point he can operate the set rig of the carriage not here shown, setting the log to the proper position on the carriage for entering the saw.

The lever 49 is operated, as the mill is running, to move the carriage past the saw, delivering the slab or cant on the rollers 107 and 108, after which it is sorted by hand upon leaving the platform 113. The carriage is then returned by the operation of the lever 49 on the friction assembly 47—48 as above described, after which the operator operates the pedals 94 and 105 in the controlling of the log turner and the log deck conveyor.

I do not wish to be limited to the exact mechanical structure as illustrated and described, as other mechanical equivalents may be substituted still coming within the scope of my claim.

I claim:

A portable sawmill including a rectangular shaped main frame mounted for ready portability, a rectangular shaped supporting frame mounted on the main frame and overhanging the sides of the main frame, said supporting frame comprising parallel side members and end members joining the side members in spaced relation to each other and relatively spaced intermediate cross beams joined at their ends to said side members in parallel spaced relation to said end members, longitudinally extending supporting members mounted on said cross beams, a power plant mounted on said supporting frame at one corner thereof, the husk assembly being positioned centrally of said supporting frame and operatively connected to said power plant, a U-shaped frame connected to the same end of the supporting frame at the corner opposite that on which the power plant is mounted and extending outwardly of the corner of said supporting frame, a pair of tracks supported by and extending along one side of the supporting frame and the U-shaped frame, a carriage on said tracks for addressing a log to the husk assembly, a platform hinged to the supporting frame at the end to which the U-shaped frame is attached and said platform extending outwardly of the supporting frame parallel to said U-shaped frame, rollers mounted on said supporting members and on said platform, a log deck at the end of the supporting frame opposite to the U-shaped frame and platform so that logs can be delivered to said carriage to be fed to said husk assembly and the slabs and sawed lumber after leaving the husk assembly being received on said rollers to be moved onto said platform for delivering said slabs and sawed lumber free of the mill, said assembly being rigid and substantially rectangular and said supporting frame retaining its rigidity throughout the transportation of said sawmill.

GLEN A. JOHNSON.

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