C. W. WILLETTE.

LOG MANIPULATING MECHANISM.

APPLICATION FILED SEPT. 23, 1912.

1,108,048.

Patented Aug. 18, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

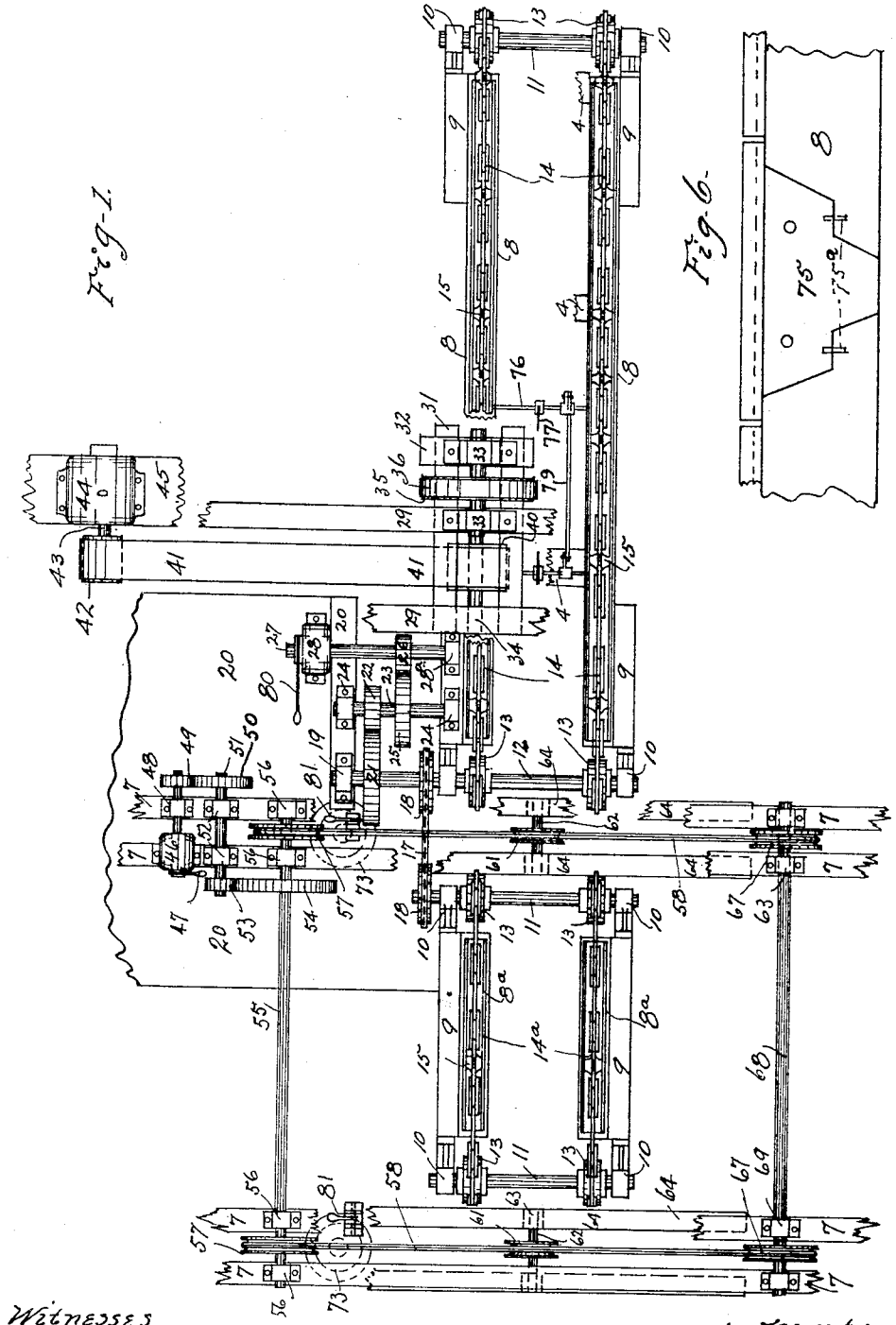


Fig. 6.

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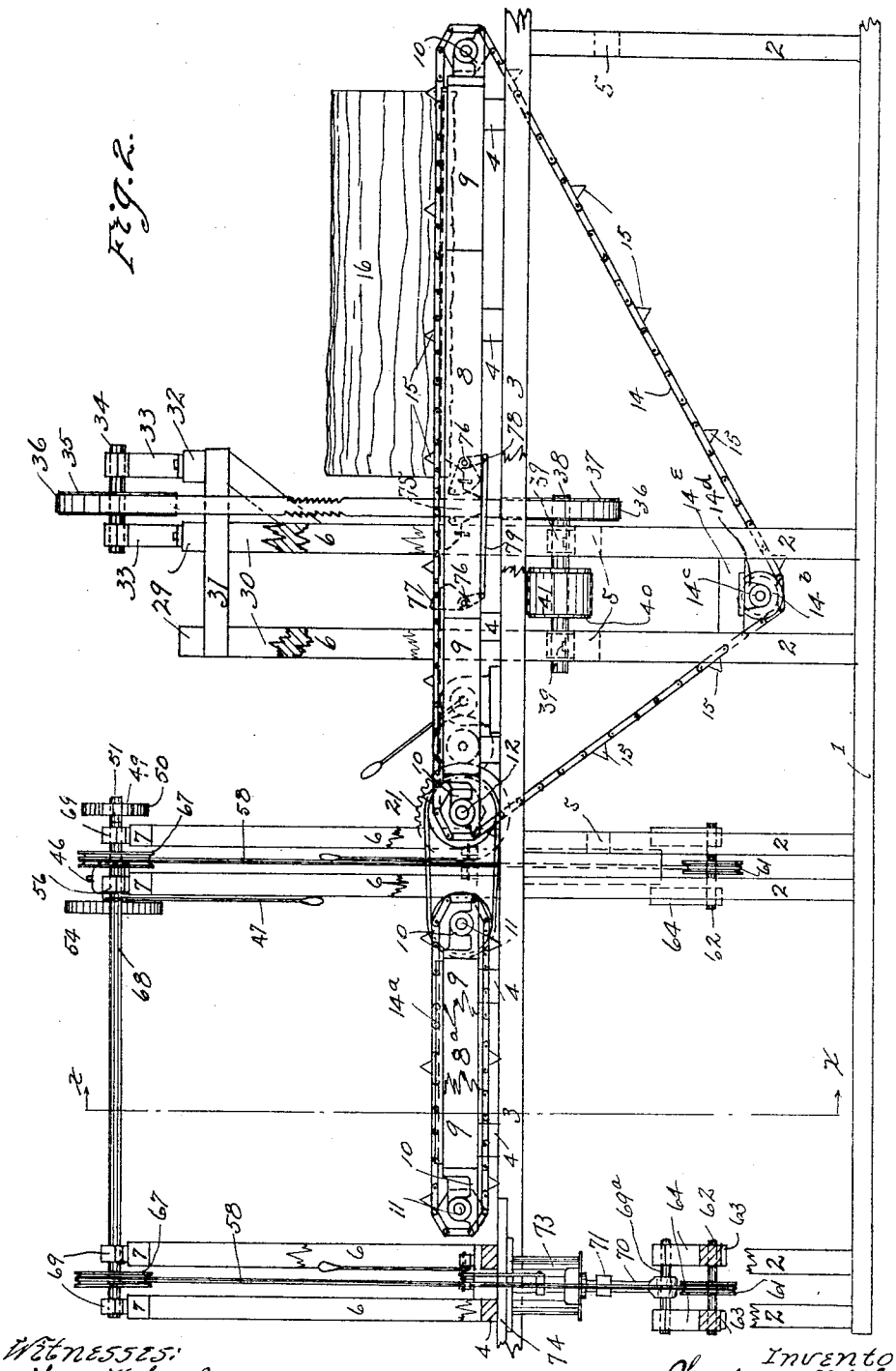
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 4.

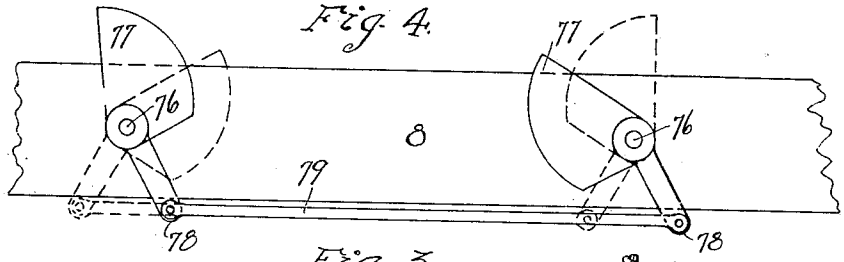


Fig. 5.

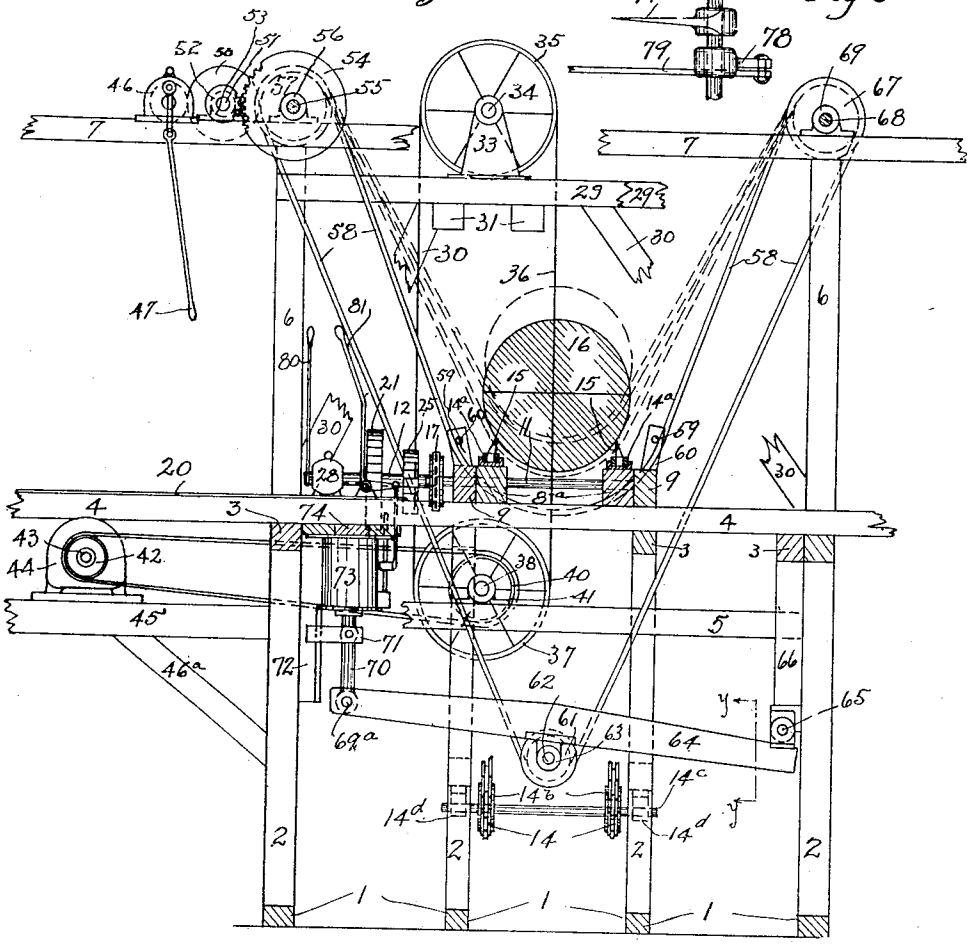


Fig. 5.

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UNITED STATES PATENT OFFICE.

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LOG-MANIPULATING MECHANISM.

1,108,048. Specification of Letters Patent. Patented Aug. 18, 1914.

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To all whom it may concern:

Be it known that I, CHARLES W. WILLETTE, a citizen of the United States, and a resident of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Log-Manipulating Mechanisms, of which the following is a full, true, and exact specification.

This invention relates to log manipulating mechanisms and particularly to that part of such mechanisms as pertains to the control of the log after it has once been cut longitudinally, the principal object being to provide improved mechanism for that purpose.

Other objects will appear as the invention is more fully described in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a plan view of the framework and conveying mechanism of an ordinary sawmill, with parts broken away and other parts omitted, and showing my improved log manipulating mechanism applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a cross-sectional view upon the line *x*—*x* of Fig. 2, looking in the direction of the small arrows, some parts being omitted and other parts broken away, for clearness. Fig. 4 is an enlarged side elevation of a fragment of the log carrying track with my improved log separating device applied thereto. Fig. 5 is a top plan view of a portion of said separating device. Fig. 6 is an enlarged fragmentary view of a portion of the log carrying track, showing a removable section therein.

Referring now more particularly to the drawings, reference numeral 1 designates the lower timbers of the frame work, from which rise the vertical timbers 2, secured to the upper ends of which are the stringers 3, to which are secured the cross-timbers 4, beneath which are similar cross timbers 5, which are also secured to the upright timbers 2. Secured to the stringers 3 and extending upwardly therefrom are the vertical timbers 6, which are joined together at their upper ends by the cross timbers 7. Supported by the timbers 4 are the longitudinal timbers 8 and 8ª, to the outer side of which and near their ends, are secured blocks 9, upon which are mounted the journal bearings 10, in which revolve the shafts 11 and 12, to which are secured the sprocket wheels 13, over which run the chains 14 and 14ª, from which project the spurs 15, and upon the said spurs is adapted to rest the log 16. The shaft 12, and one of the shafts 11 are connected by the chain 17, which runs over the sprocket wheels 18, secured to the said shafts. The outer end of the shaft 12 runs in the journal bearing 19, supported upon the platform 20, which, in turn, rests upon the cross timbers 4. Secured to the shaft 12 is the gear wheel 21 which meshes with the similar gear wheel 22, secured to the shaft 23 which is mounted in the journal bearings 24, secured to the platform 20. Secured to the shaft 23 is the gear wheel 25, which meshes with the similar wheel 26, fixed to the main shaft 27 of the motor 28 which is supported upon the platform 20. The opposite end of the shaft 27 revolves in the bearing 28ª upon the said platform. By the chain of parts just described power is transmitted from the motor 28 to drive the chains 14, and also, at the same time, by means of the connecting chain 17, the wheels 18 and 13 and shaft 11, and the chains 14ª are driven, as will be understood. The chains 14 are kept taut by means of the pulleys 14ᵇ, secured to the shaft 14ᶜ, revolving in the bearings 14ᵈ upon the cross-piece 14ᵉ. Extending from one of the vertical timbers 6 to another are the timbers 29 which may have the oblique braces 30 which extend downwardly to the vertical timbers 6, on each side. Secured to the underside of the timbers 29 are the timbers 31, to the extreme right hand ends of which is secured the short crosspiece 32, upon which and also upon one of the timbers 29 are the journal bearings 33, in which revolves the shaft 34, to which is fixed the wheel 35, over which runs the endless band saw 36 which has teeth upon both of its edges so that it will cut a log moving in either direction. The said saw extends downwardly and passes around the wheel 37 which is secured to the shaft 38 running in the journal bearings 39, secured to the cross-timbers 5.

Secured to the shaft 38 is the pulley 40 over which runs the belt 41 which extends to the left and also passes over the pulley 42, secured to the shaft 43 of the motor 44 which is supported by the timbers 45 which project from the vertical timbers 2 on the left side of the framework, and which are braced as at 46ª. By means of the parts last described power is transmitted from the motor 44 to run the saw 36. Upon one of the timbers 7, at the top of the framework,

is the motor 46 having the controlling lever 47 within convenient reach of a person upon the platform 20. The outer end of the shaft of the said motor revolves in the bearing 48, secured to one of the timbers 7, and to the extreme right hand end of the said shaft is fixed the wheel 49 which meshes with the wheel 50 which is fixed to the shaft 51, revolving in the bearings 52, secured to the timbers 7. To the left hand end of the shaft 51 is fixed the gear wheel 53 which meshes with the similar wheel 54 secured to the shaft 55 which revolves in the bearings 56 upon the timbers 7. To either end of the shaft 55 are fixed the grooved pulleys 57 over which run the ropes 58, the upper side of which is looped downwardly and around the pins 59 in the blocks 60, fixed to the timbers 9, and the other side of the ropes are looped still further downwardly and pass around the pulleys 61 which are fixed to the shafts 62 which revolve in the bearings 63, secured to the levers 64 which are pivoted at one of their ends as at 65, to the blocks 66 which are fixed to the vertical timbers 2. (See Fig. 3. The levers 64 are cross-sectioned upon the line *y—y*.) After passing downwardly and around the pulleys 61 the ropes 58 are returned upwardly and around the pulleys 67 (see Figs. 2 and 3), and are finally returned downwardly as plainly shown in Fig. 3, it being understood that the ropes 58 are endless. The pulleys 67 are secured to the shaft 68 which revolves in the bearings 69, fixed to the timbers 7. Through the chain of parts just described power is transmitted from the motor 46 to move the ropes 58 in the direction of their lengths. The left hand ends of the members 64 are pivotally connected as at 69^a to the lower ends of the pistons 70, secured to the crossheads 71 which slide freely upon the ways 72, secured to the upright timbers 2. The upper ends of the pistons 70 work within the steam cylinders 73, secured to the timbers 74 which are fastened to the lower sides of the timbers 4.

To conveniently change the saw 36 I provide a removable section 75 (having the dowel pins 75^a) in the timber 8 which is embraced by the said saw, so that a link of the chain 14 may be unfastened and the ends of the chain held while the section 75 is lifted out and the saw changed for filing or other purposes.

Pivotally mounted upon the rods 76 which extend from one of the timbers 8 to the other are the thin sectors 77 which have the downwardly extending arms 78, the lower ends of which are connected by the link 79. The said sectors lie centrally between the timbers 8 and in the vertical plane of the saw 36 for the purpose of spreading and holding apart the two halves of the log as it is being sawed, and thus prevent the binding of the saw between the sawed portions of the log. As stated, the saw has teeth upon both of its edges. As the log moves along in either direction it contacts with one or the other of the sectors 77 and depresses it, as plainly shown in Figs. 2 and 4, which, due to the connecting link 79, raises the other sector into the path of the log and ready to enter the cut just made by the saw.

The operation of the device is as follows: The log 16 is placed upon the spurs 15 of the chains 14, as shown in Figs. 2 and 3, the motor 28 being set to run the said chains from right to left, by means of the controlling lever 80 of the said motor. The motor 44 transmits motion to the saw 36, through the chain of parts already described, and, as the log is carried against the saw, it is sawed in two longitudinally, the sectors 77 holding the two halves apart, as above described, so that the saw is not cramped therebetween. The operator allows the log to be carried to the left until the ropes 58 encircle it at approximately its two ends, when the operator stops the motor 28 which, of course, causes the chains 14 and 14^a to come to rest. The ropes 58 are now removed from the pins 59 and, by means of the levers 81, steam is let into the cylinders 73 which causes the pistons 70 to descend and carry with them the ends of the levers 64 to which the said pistons are attached. The descending levers move the pulleys 61 with them and draw the lowermost loop of the ropes 58 downwardly and cause the upper loop thereof to move upwardly carrying with it the log 16 into its dotted position as shown in Fig. 3. By means of the lever 47 the operator now starts the motor 46 which, through the chain of parts already described, moves the ropes 58 in the direction of their lengths and rolls the log into its position as shown in full lines in Fig. 3. The motor 46 is now stopped and the passage of steam into the chests 73 shut off which allows the log to sink back upon the spurs 15, which, through the ropes 58, draws the levers 64 back to their positions as shown in Fig. 3. The ropes 58 are now looped back under the pins 59 and the motor 28 started in the opposite direction to that which it just previously had, which causes the chains 14 and 14^a to carry the log back against the saw 36 where it is again cut at right angles to the first cut, and thus the log is quartered.

It is clear that both of the pairs of levers 64 may be operated simultaneously and to the same degree, or that either of them may be operated separately and to a different degree, so as to lift both ends of the log simultaneously to the same height, or to lift one end of the log higher than the other. This is important because logs, and especially very large Redwood logs, are very irregular at the butt, while at the other end

the log is practically round. It is therefore clear that the round end of the log need not be raised from the dogs 15 more than just enough to clear the dogs, while the opposite end of the log, being so irregular in shape, would be required to be lifted much higher in order to allow its irregular projections to clear the dogs when the log is being turned. In such cases it would not do to lift both ends of the log sufficiently high to clear any obstructions that may exist in the butt of the log for then the round end of the log would have to drop so far before it again rested upon the dogs 15 that the log would be likely to turn on its longitudinal axis, with the result that in its return travel it would not be sawed at a right angle to the first saw cut, and the four parts of the log would then not be about uniform in size for convenient handling and slabbing.

I have shown a particular form of embodiment of my invention but I am fully aware that many minor changes therein will readily suggest themselves to others skilled in the art, without departing from the spirit and scope of the invention, and I do not, therefore, desire to be limited to the particular form shown and described.

What I claim as new and desire to protect by Letters Patent is—

1. The combination with the track frame of a saw mill having parallel conveying chains at each side of the plane of the saw, of a supplemental frame having a track and conveying chains extending along in the plane of the same parts of the main frame of the saw mill, but spaced apart therefrom, flexible members normally looped beneath the path of the log, but out of contact therewith, whereby free movement of the log is permitted independently of its conveying chains, and means for holding the loop in that position, levers upon said supplemental frame, and to which said flexible members are connected, means for depressing one of the ends of said levers whereby said flexible members are actuated to lift the log, and means for drawing said flexible members in the direction of their lengths to turn the log.

2. In a log manipulating device, the combination of a frame, a track therealong, parallel log conveying chains upon the said track, flexible members normally looped beneath the plane of said track and partially surrounding the same, means for elevating either of said flexible members independently of the other so as to embrace and lift the ends of the log different distances and means for drawing the said flexible members in the direction of their lengths to turn the log.

3. In a log manipulating device, the combination of a frame and means for conveying a log therealong, flexible members normally passed beneath the path of the log and partially surrounding the same, but in spaced relation to the track, whereby free movement of the latter is permitted, means for stopping and starting said conveying means, means for elevating the said members independently of each other and to different heights so as to embrace and lift the ends of the log clear of its conveying means, and means for drawing said flexible members in the direction of their lengths to turn the log.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."