

(No Model.)

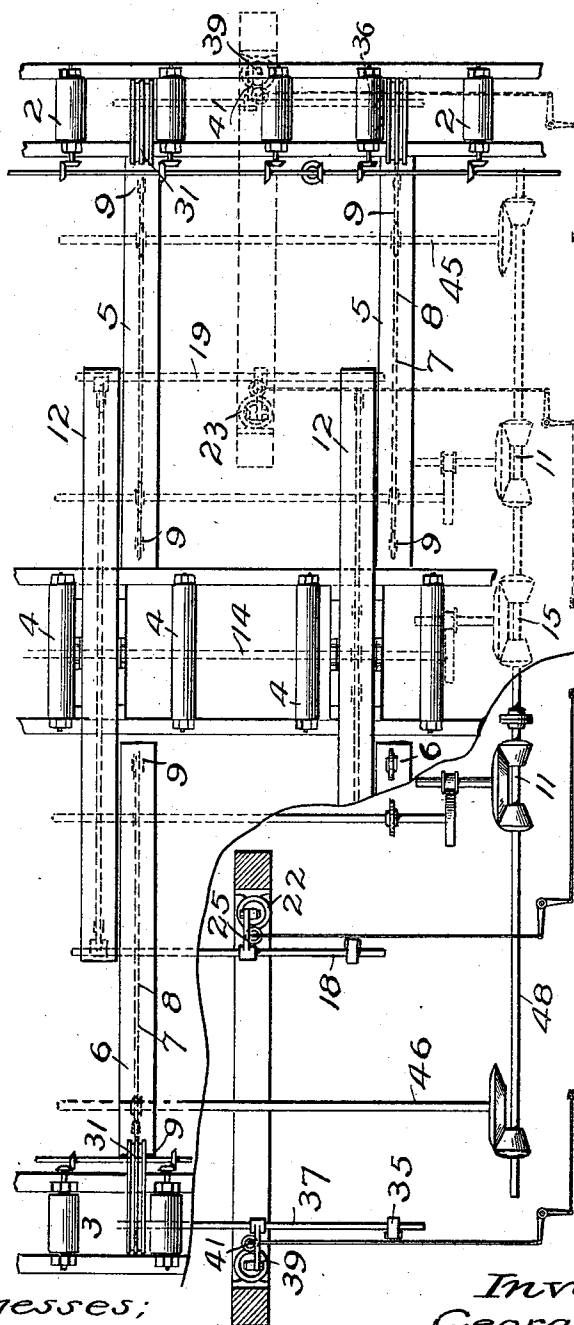
3 Sheets—Sheet 1.

G. A. KELLY & W. A. WILKINSON.
STEAM LOG TRANSFER.

No. 538,613.

Patented Apr. 30, 1895.

Fig. 1.



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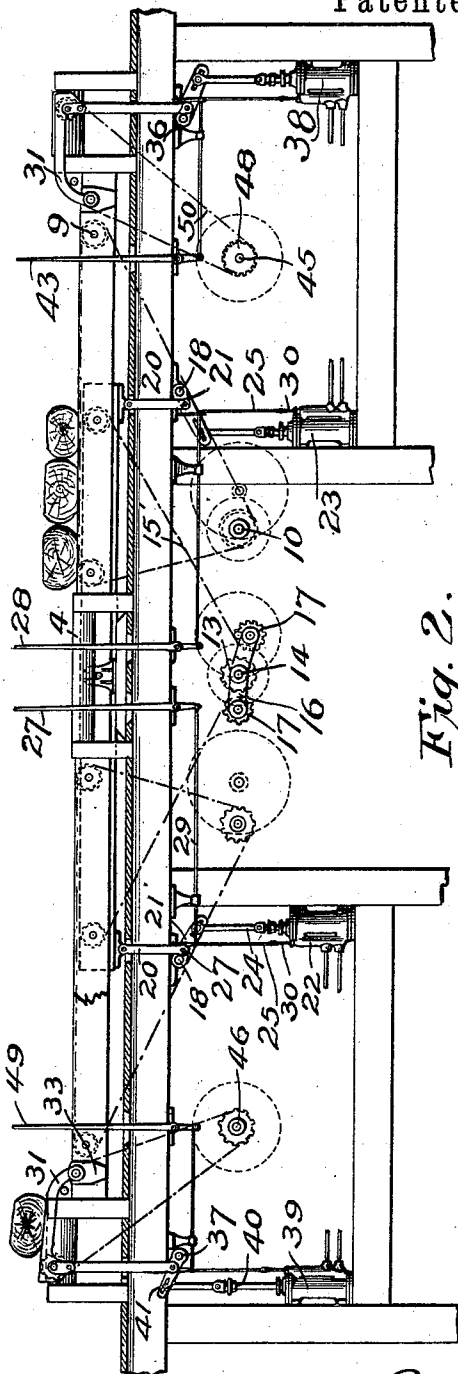


Fig. 2.

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(No Model.)

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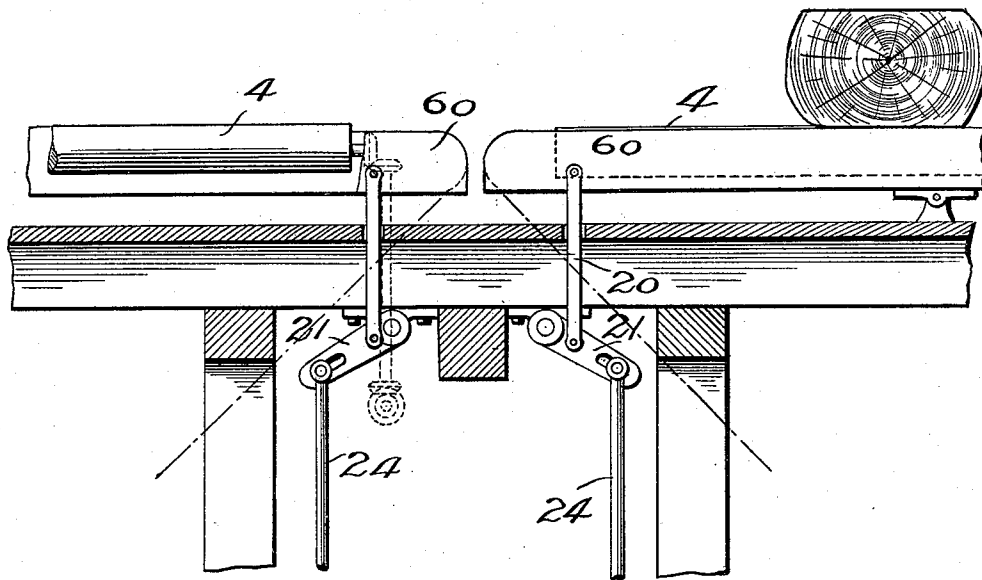


Fig. 3.

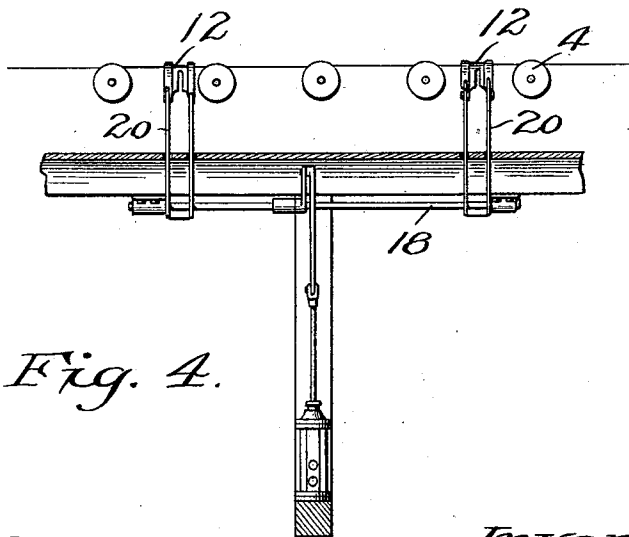


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE A. KELLY AND WILLIAM A. WILKINSON, OF MINNEAPOLIS,
MINNESOTA.

STEAM LOG-TRANSFER.

SPECIFICATION forming part of Letters Patent No. 538,613, dated April 30, 1895.

Application filed April 20, 1894. Serial No. 508,325. (No model.)

To all whom it may concern:

Be it known that we, GEORGE A. KELLY and WILLIAM A. WILKINSON, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a certain new and useful Steam Log-Transfer, of which the following is a specification.

Our invention relates to means for transferring logs, timbers or cants from the rolls which lead from the band or circular saw to the gang rolls which are adapted to carry the logs or cants to the gang sawing machine or other destination; and the object of our invention is to provide steam actuated means for lifting and carrying the logs from the saw rolls to the cross carrier or transfer, and a further object is to provide similarly operated means for lifting and carrying the logs or cants from said carrier or transfer and depositing the same upon the gang rolls or vice versa.

Our invention consists in general in the combination with the saw rolls or ways, of tilting or pivoted arms and means for raising the same between said rolls to lift a log or cant therefrom, in combination with a driven chain or belt operating over each arm, and whereby the logs or cants lifted thereby are carried off the arms and deposited upon the cross carrier timbers, and in the combination, with the gang rolls, of lifting timbers and chains or belts operating over the same, and means for raising said lifting timbers whereby the logs are lifted from the cross timbers and conveyed over the gang rolls to be deposited thereon by the lowering of said lifting timbers, and in a particular steam actuated mechanism combined with the above, and in various details of construction and in combinations all as hereinafter described and particularly pointed out in the claims.

Our invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a double log-lifting mechanism embodying our invention. Fig. 2 is a side view thereof. Fig. 3 is a modification showing two sets of gang-rolls and the mechanism below them connecting the lifting-timbers with the steam-cylinder. Fig.

4 is a sectional view showing the ends of the gang-rolls, the rock-bar, and other mechanism for operating the lifting-timbers.

As shown in the drawings, 2 and 3 represent the two sets of saw rolls adapted to carry the logs or cants from their respective circular or band saws. These several rolls are driven in the same direction and by the ordinary means. The series of gang rolls 4 are preferably parallel with the saw rolls, and arranged midway between them.

5—5 and 6—6 represent the stationary beams of the cross carriers or transfers, each provided with a channel 7 for the sprocket belt 8. The tops of the belts or chains extend a little above the upper surface of the timbers of the cross carrier so that the logs, cants or other timbers are carried upon the chains. The sprocket belts pass over sprocket wheels 9 provided in the end of the cross carrier timbers and are driven from a constantly rotating shaft, which, however, may be rotated in either direction by the set of friction pulleys 11.

The long vertically movable lifting timbers 12 are arranged parallel with the cross carrier timbers 5 and 6 and lap beyond the ends thereof a considerable distance. A sprocket or chain belt 15' is arranged to operate along the top of each timber 12, the belts being driven from sprocket wheels 13 provided on the reversible shaft 14 arranged to be rotated in either direction through the medium of the set of friction cones 15. To take up the slack in the belts 15' of the lifting timbers 12 we provide cross arms 16 and idler wheels 17 for each belt. If the direction of movement of the belts 15' is changed the idler on one side of the sprocket wheel 13 will be thrown up and the idler upon the other side of the sprocket wheel thrown down, and the slack will thereby be taken up and the belts be held from dropping off the sprocket wheels 13, and sufficient slack is left in the belts to permit the timbers 12 to be raised while the shaft 14 remains stationary.

The timbers 12 extend across between the gang rolls 4 and the tops of the timbers normally lie beneath the tops of the stationary beams of the cross carrier. At opposite ends beneath the lifting timbers 12 we provide

rocking shafts 18 whereon said timbers are supported by means of pivotal links 20 which extend upward from short arms 21 secured upon the rocking shafts. A steam cylinder 22—23 is provided beneath each rocking shaft 18 and the piston rod of each is connected by a rod 24 to the arms 21' secured upon the rocking shaft. The inlet and exhaust of steam from the two cylinders 22 and 23 are controlled by means of corresponding hand levers 27 and 28 extending through the floor above and having their lower ends connected by a suitable arrangement of rods 25 and 29 to the valve stem 30 of the cylinder. Two tilting pivoted arms 31 extend across each saw way 2 and 3 between the rolls thereof and preferably in line with the cross carrier timbers 5—6. These arms 31 are preferably lower than the tops of the saw rolls and the inner ends of the arms are curved downwardly and pivoted in blocks 33 arranged on the cross carrier timbers. The outer ends of the arms are supported by links or connecting rods 34 having their lower ends secured on the arms 35 of the respective rocking shafts 36—37. Beneath are the steam cylinders 38—39, the piston rods 40 thereof being connected to the arms 41 on the rocking shafts 36—37. The inlet and exhaust of steam from the two cylinders 38 and 39 are regulated by means of the hand levers 43 and 49 respectively, connected to the valve stems as in the case of the middle levers 27—28.

45 and 46 represent similar driving shafts arranged to be driven from the main driving shaft 48 of the mechanism and from sprocket wheels 48' and 48'' on these shafts. Loose sprocket chains or belts 50 extend over these sprocket wheels, over the tilting or lifting arms 31 above, passing over idler wheels 52 provided in the outer ends of said arms. Owing to the curved form of the inner end of the arm other idlers are dispensed with at those points.

The modification shown in Fig. 3 may be described as the same as that shown in Figs. 1 and 2, with the exception that in place of single long timbers 12 two timbers 60 take the place of each and lifting power is applied to the inner ends thereof. The pairs of lifting timbers 60 are independently movable so that one side of the mechanism may be used without the other. In this case two sets of gang rolls are preferably employed, the same being provided between the outer ends of the lifting timbers. In order that the throw of the timbers may be regulated we preferably provide a slot and pin connection between each of the long rocker arms and the piston connecting rod belonging thereto.

The operation of our steam log transfer is as follows: The slabs, boards, and the cants are brought from the band saw by the rolls 2—3. The arms 31 normally lie beneath the tops of the saw rolls and hence the slabs and boards will be carried along over the arm and

to their proper destination; but when a cant approaches along the saw rolls it is allowed to advance until its ends are brought over the two lifting arms 31, at which instant the man at the lever 43 or 49, whichever side of the machine the cant comes from throws his lever to open the steam port beneath the piston of the cylinder, whereupon the piston is forced up, lifting the rocker arms and therewith the outer ends of the tilting or lifting arms 31. The cant is thus taken up on the arm 31 and lifted clear of the saw roll and is immediately carried sidewise by the moving sprocket belt operating on the tops of the arms 31. The cant is thus carried upon the cross carrier chain and moves therewith toward the gang roll until striking suitable stops provided at the edge of the gang way, where the cant is held the carrier belts or chains sliding beneath it. The next cant is transferred in a similar manner and delivered at the sides of the first cant, and so on until a gang load has been accumulated, whereupon the lever 27 or 28 is thrown to open the corresponding steam port of a corresponding cylinder and thereby raise the end of the lifting transfer timbers 12 which lift the accumulated cants from the cross carrier beams to a height above the tops of the gang roll. At the same time the friction pulley lever connected with the pulleys of the set of friction cones 15 is thrown so that the sprocket chains or belts on the timbers 12 will move to carry the group of cants over the gang rolls. At the instant the same arrive at a point just over the gang rolls the hand lever is thrown in the opposite direction to drop the steam piston and therewith the timbers 12 to deposit the group of cants upon the gang roll, by which rolls they are carried to the gang saw or other device.

Both sides of our machine may be operated at the same time and the cants from the opposite sides may be sorted together or upon one side only to make up the proper gang load, or the two sides or ends of the vertically movable lifting frame may be operated alternately, one load being thrown on the gang rolls while the other is being accumulated on the other side.

Where one side of the mill has occasion to be operated without the other we prefer to provide independent lifters such as are shown in Fig. 3 of the drawings.

It is obvious that this mechanism may be duplicated at a point back of the gang saws and used to distribute the lumber on either one or both sides of the several gang rolls leading from the saws.

We claim—

1. The combination, with the saw rolls, of pivoted arms extending across the same and normally below the upper surface thereof, chains or belts operating over said arms, means for raising the outer end of said arms, stationary timbers below the plane of said saw rolls and extending from said rolls to gang

rolls parallel thereto, chains operating in channels in said timbers forming therewith a cross carrier, vertically movable lifting timbers below the plane of said cross carrier timbers and gang rolls, chains operating over said timbers, a regulable steam mechanism for raising or lowering the same, and a friction mechanism for changing the direction of the moving chains thereon, substantially as described.

2. The combination, with the saw rolls, of pivoted arms extending across the same and normally below the upper surface thereof, chains or belts operating over said arms, means for raising the outer ends of said arms, stationary timbers below the plane of said saw rolls and extending from said rolls to gang rolls parallel thereto, chains operating in channels in said timbers forming therewith a cross carrier, vertically movable lifting timbers extending between the gang rolls below the upper surface thereof, and the upper surface of the timbers of said carrier and overlapping the ends thereof, and a regulable steam mechanism for raising or lowering said lifting timbers, substantially as described.

3. The combination, with the gang rolls, of vertically movable lifting timbers between the gang rolls and extending outwardly on either side therefrom, a steam actuated mechanism beneath said lifting timbers for raising or lowering the same, chains operating over said lifting timbers, a reversible shaft beneath said gang rolls and timbers, sprocket wheels 13 on said shaft, similar sprocket wheels on the ends of said lifting timbers, sprocket belts passing over said sprocket wheels, idler sprocket wheels on either side of said sprocket wheels 13 to take up the slack in said sprocket belts, substantially as described.

4. The combination, with the gang rolls, of the cross carrier timbers for conveying logs thereto, vertically movable lifting timbers between said gang rolls and extending outwardly therefrom and overlapping the ends of the timbers of said cross carrier, a steam actuated mechanism for raising or lowering said lifting timbers, chains operating over said timbers, a reversible shaft beneath said gang rolls and timbers, sprockets 13 upon said shaft, similar sprockets on the ends of said lifting timbers, chains or belts passing over said wheels, idler sprockets on the cross arms 16 to engage the sprocket belts on either side

of said sprocket wheels 13, substantially as described.

5. The combination, with the two sets of saw rolls, of the pivoted lifting arms between said rolls, chains operating over said arms, a regulable steam mechanism for operating said arms, the middle gang rolls, the stationary cross timbers extending from the saw rolls to the gang rolls, the chains running over said timbers, the vertically movable lifting timbers extending across the gang way between the gang rolls and overlapping the ends of the stationary cross timbers, the chains operating over said lifting timbers, means for reversing the movement of said chains, and means for taking up the slack therein, substantially as described.

6. The combination, with the saw rolls, of pivoted arms extending across the same and normally below the upper surface thereof, chains or belts operating over said arms, a regulable steam mechanism for raising the outer end of said arms, stationary timbers below the plane of said saw rolls, and extending from said rolls to gang rolls parallel thereto, chains operating in channels in said timbers, vertically movable lifting timbers between said gang rolls, a regulable steam mechanism for raising or lowering the same, a reversible shaft below said timbers, sprocket wheels 13 on said shaft, sprockets on the ends of said timbers, belts operating over said sprockets, cross arms 16, the idler wheels 17 carried by said cross arms, and the friction mechanism for changing the direction of the moving chains on said lifting timbers, substantially as described.

7. The combination with the saw rolls, of pivoted arms extending across the same and normally below the upper surface thereof, the inner ends of said arms being curved downwardly and pivoted, sprockets upon the outer ends of said arms, a shaft, sprockets upon said shaft, chains operating over said sprockets and said arms, and a regulable steam mechanism for raising and lowering said arms, substantially as described.

In testimony whereof we have hereunto set our hands this 17th day of April, A. D. 1894.

GEORGE A. KELLY.

WILLIAM A. WILKINSON.

In presence of—

C. G. HAWLEY,
FRED S. LYON.