J. W. BECK, J. W. REID & R. W. SKINNER.

MACHINE FOR MAKING RAILWAY TIES.

APPLICATION FILED JUNE 27, 1912.

1,093,680.

Patented Apr. 21, 1914.

4 SHEETS—SHEET 1.

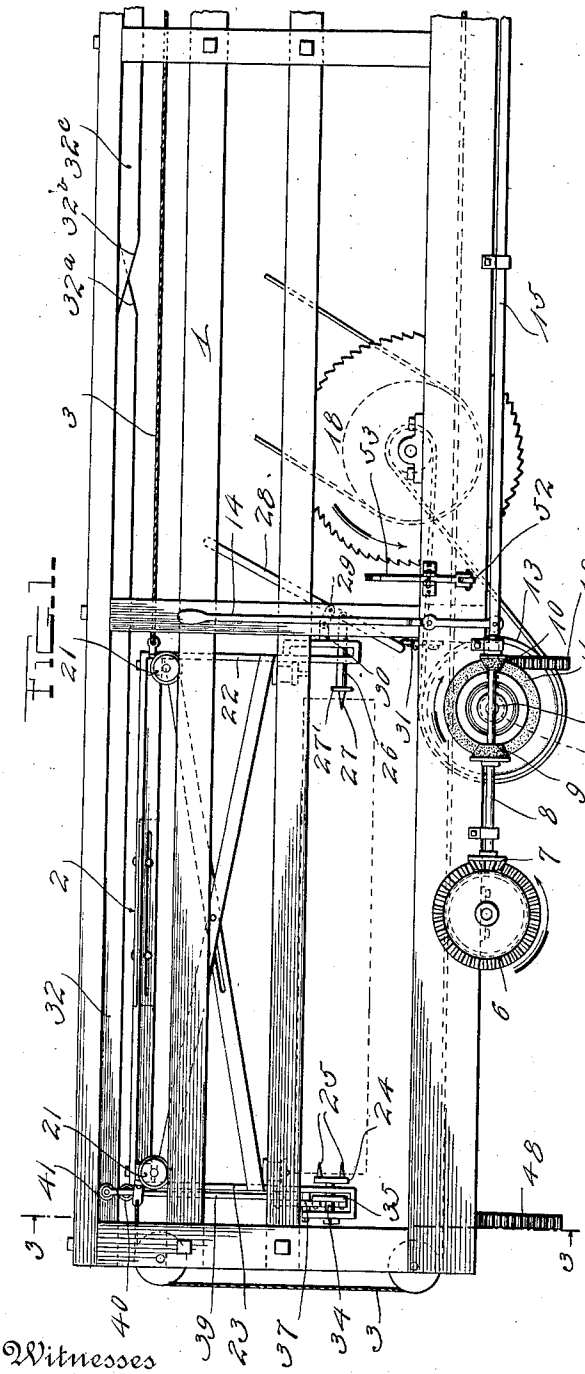


FIG. 1.

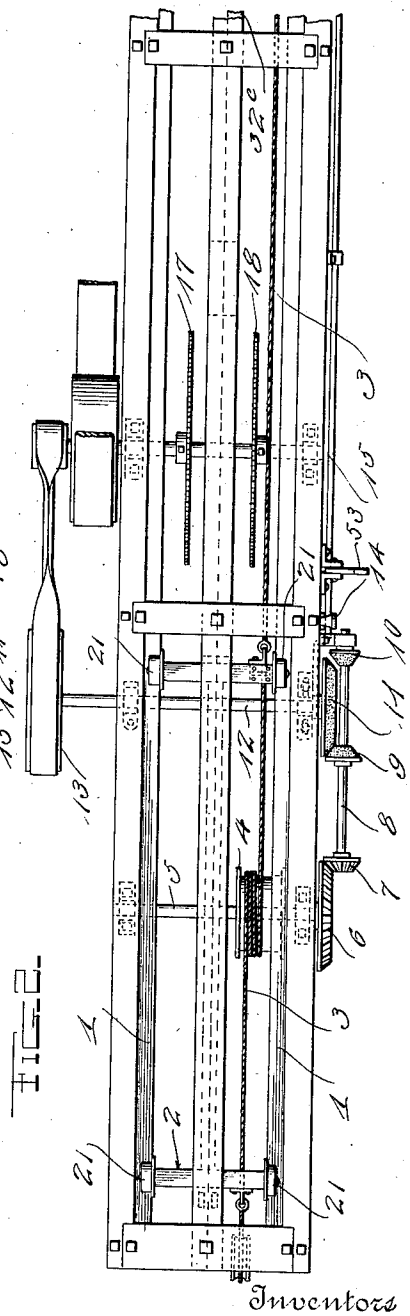


FIG. 2.

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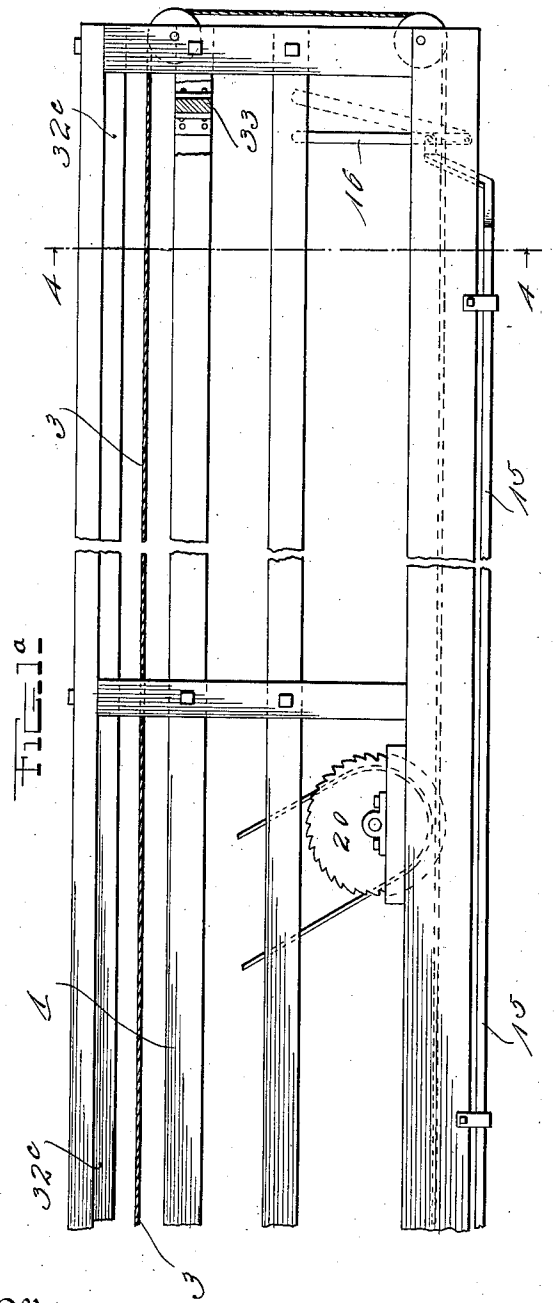


FIG. 1a

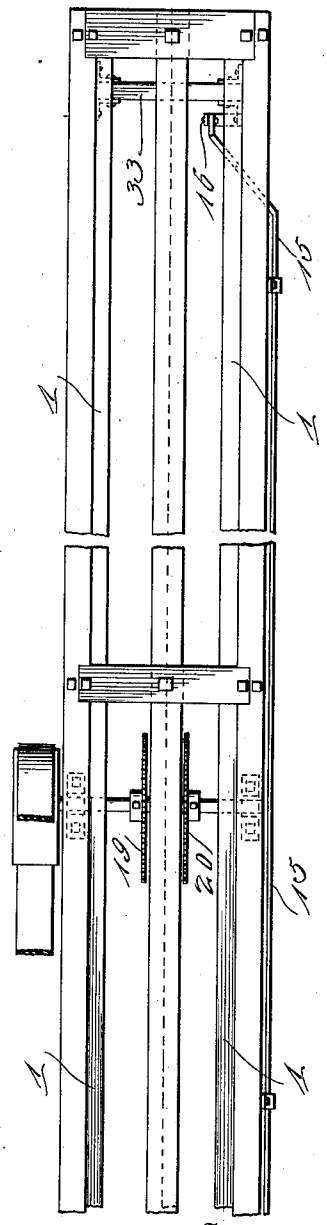


FIG. 2b

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4 SHEETS—SHEET 3.

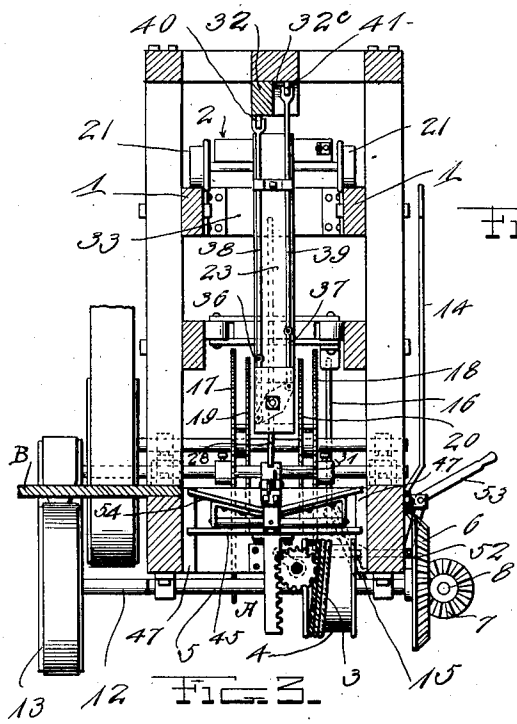


FIG. 3.

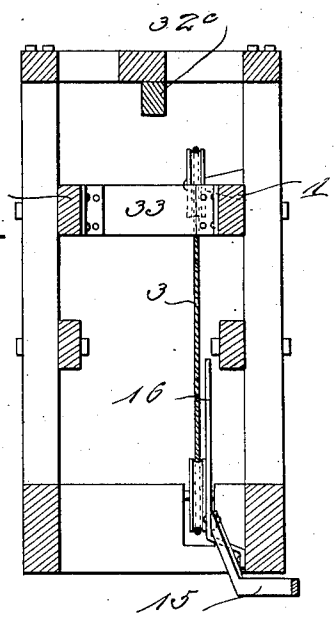


FIG. 4.

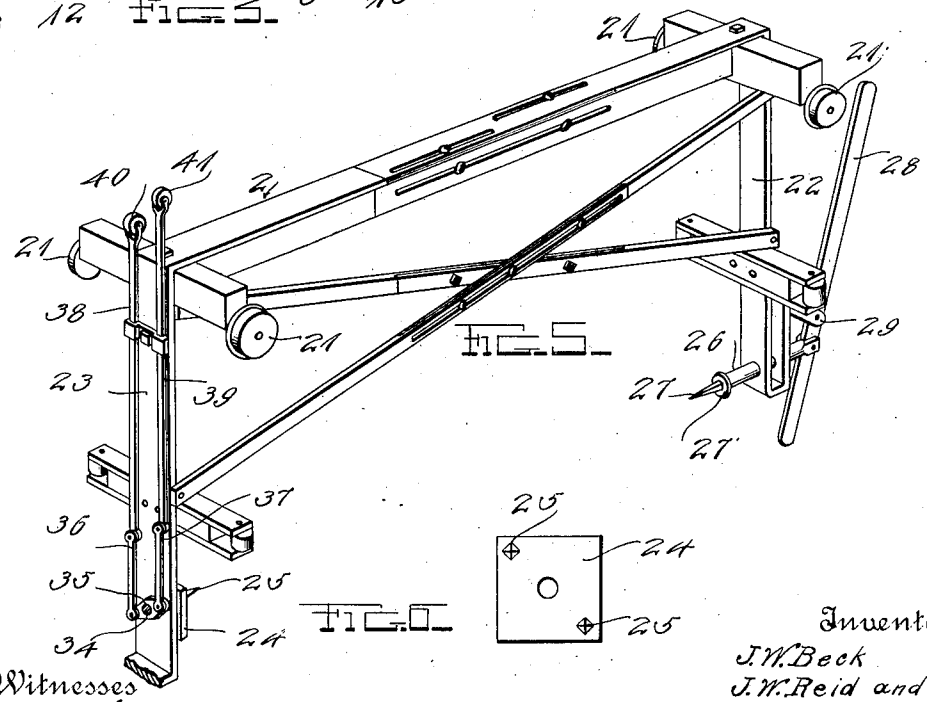


FIG. 5.

FIG. 6.

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4 SHEETS—SHEET 4.

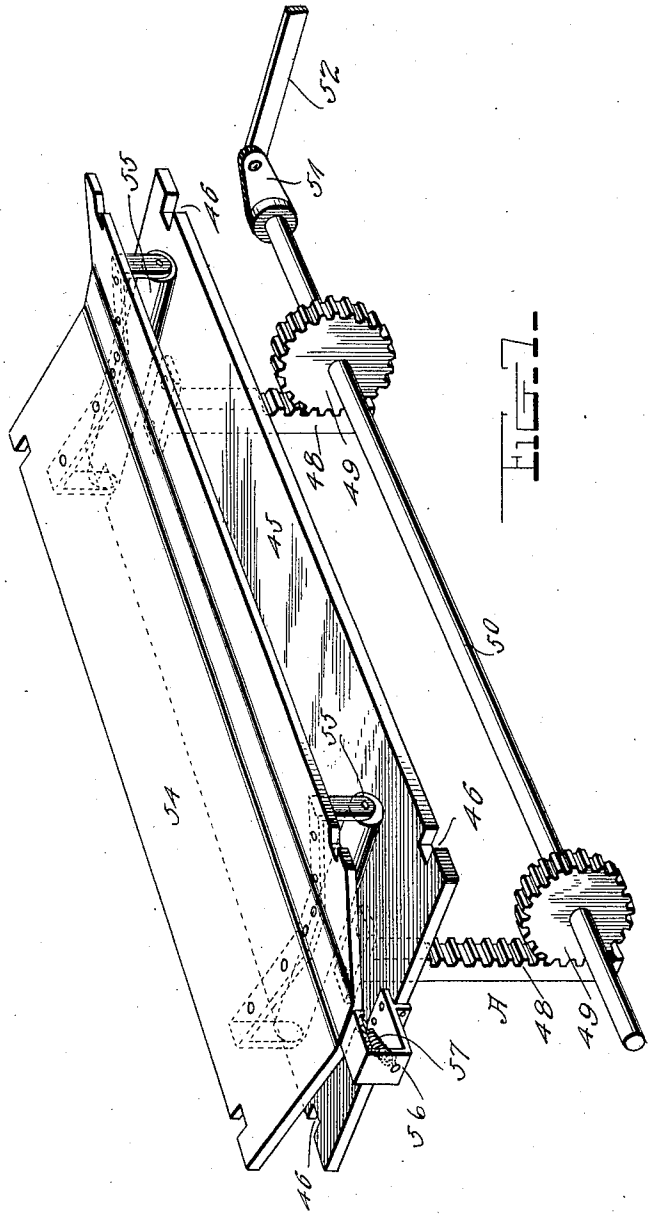


FIG. 7

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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING RAILWAY-TIES.

1,093,680. Specification of Letters Patent. **Patented Apr. 21, 1914.**

Application filed June 27, 1912. Serial No. 706,300.

To all whom it may concern:

Be it known that we JOSEPH W. BECK, JOSEPH W. REID, and RAYMOND W. SKINNER, citizens of the United States, residing at El Rito, in the county of Rio Arriba and State of New Mexico, have invented certain new and useful Improvements in Machines for Making Railway-Ties; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved machine for making railway ties.

The object of the invention is to provide a simply constructed and efficient machine whereby a tie may be automatically turned and completed on the movement of the log carriage in one direction and which is provided with means for automatically reversing the direction of movement of the carriage and returning it to loading position after the completion of a tie.

Another object of the invention is to provide improved log holding means for securing a log in operative position in the carriage.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings:—Figure 1 represents a side elevation of one end of this improved machine with the parts in operative position; Fig. 1ª is a similar view of the other end of the machine; Fig. 2 is a plan view of one end thereof; Fig. 2ª is a similar view of the other end thereof; Fig. 3 is an enlarged transverse section taken on line 3—3 of Fig. 1; Fig. 4 is a similar view on line 4—4 of Fig. 1; Fig. 5 is a perspective view of the carriage detached. Fig. 6 is a detail front face view of the log engaging plate. Fig. 7 is a detail perspective view of the improved log lifting and centering apparatus.

In the embodiment illustrated, a suitable supporting structure is shown having a track 1 on which a log carriage 2 is designed to travel. This carriage may be operated by any suitable means, a cable 3 being here shown secured at its ends to the carriage 2 and wound in opposite directions on a drum 4 revolubly mounted in the supporting frame, preferably on a shaft 5 having a beveled gear 6 which meshes with a similar gear or cog 7 secured to a shaft 8 arranged longitudinally of the frame and provided with beveled friction disks 9 and 10 which are designed to engage a larger friction disk 11 fixed on a revoluble laterally movable shaft 12 mounted transversely in the frame or supporting structure and having a driving pulley 13 by means of which the disk 11 is rotated and motion imparted through one of the disks 9 or 10 to the drum 4 according to the direction in which it is designed to wind the cable on the drum. The shaft 12 on which the disk 11 is fixed is adapted to be moved longitudinally of the carriage a sufficient distance to bring it into engagement with one or the other of the disks 9 and 10 or to so position said disk 11 that it will be out of engagement with both disks 9 and 10, thereby throwing the carriage out of operation as will be described hereinafter.

A lever 14 for controlling the engagement of the disks 9 and 10 with the driving disk 11 is fulcrumed on the frame of the machine intermediately of its ends and is connected at one end to the shaft 12 by means of a bar 15 which is preferably arranged parallel with the side members of the frame and is connected at its front end with a reversing lever 16 disposed in position to be engaged by the log carriage at the end of its cutting stroke whereby said lever is shifted and through the shifting bar 15 throws the disk 11 into operative engagement with the disk 10 and thereby winds the drum in the opposite direction, thus reversing the movement of the carriage and returning it to loading position as shown in Fig. 1.

A pair of saws 17 and 18 are disposed in the path of the log carriage near one end of the frame in position to engage opposite sides of the log and cut off slabs therefrom. A similar pair of saws 19 and 20 are arranged in the path of the log carriage at a point in advance of the first mentioned saws and are adapted to engage the log after it has been turned by the hereinafter described mechanism for cutting slabs from the opposite sides, thus forming a tie of the required dimensions. These saws are adjust-

able toward and away from each other to adapt them to cut ties of varying sizes if desired. The log carriage 2 herein shown comprises a suitably braced frame having rollers 21 at its opposite ends which are designed to travel on the track 1. It is also provided with depending end members 22 and 23 in the free ends of which are mounted log engaging spurs, any desired number of which may be employed. As shown, a plate 24 is mounted on the inner face of the end member 23 and is provided with laterally extending spurs 25, while the other end member 22 has a bar or rod 26 mounted to slide therein in a plane at right angles thereto, said bar being provided at its inner end with a log engaging spur or spurs 27 and to its other end, which projects beyond the end member 22, is secured a lever 28 by means of which said bar is projected and retracted to cause the spur 27 thereon to engage or disengage the log as may be desired. This lever 28 is fulcrumed intermediately of its ends to one end of a link 29, the other end of which is pivotally connected with a lug 30 projecting forwardly from the end member 22 in a plane above the bar 26.

Disposed at a suitable point in the path of the carriage 2 is a trip member 31 which is preferably in the form of a block, positioned to engage the lower end of the lever 28 when the carriage is moved forward thereby forcing said lever into the position shown in Fig. 1 thus moving the bar 26 inward and causing the spur 27 thereon to forcibly engage the log to be sawed, said spur being forced into the log until the shoulder 27′ of the spur comes in contact with the log. The forward moving of the carriage also causes the spurs 25 at the other end of said carriage to be driven into the other end of the log whereby said log is securely held in position ready for engagement with the saws.

The plate 24 must carry at least two spurs 25 and is secured to a rod 34 revolubly mounted in the end member 23, said end member preferably having its lower end upturned and spaced from the body portion thereof to form alined bearings for the rod 34. A plate 35 is fixed to said rod 34 between the bearings thereof and said plate is preferably diamond shaped as shown in Fig. 5, the rod 34 passing through the center thereof. Links 36 and 37 are pivotally connected at one end with the opposite ends of said plate 35 and the other ends thereof are pivoted to vertically extending laterally spaced bars 38 and 39, which bars are of the same length and are provided at their free ends with rollers 40 and 41. These rollers are designed to travel on tracks or beams secured to the upper end of the supporting frame and to which cams or trip blocks 32 and 32^c are secured and project in the path of the bars 38 and 39 at different portions of the track and when one of said blocks is engaged by the roller carrying end of a bar it causes said bar to be forced downwardly and the other bar upwardly thereby rocking the plate 35 and the shaft 34 to which it is fixed, thus imparting a turning motion to the plate 24 which is fixed to the log and by this means giving the log a one-quarter turn to position it ready for engagement by the saws 19 and 20, the blocks being of a size to impart the desired turn to the log. When the free end of one bar is lowered the other is elevated and vice versa. As shown the trip block 32 extends from the loading end of the structure to a point just beyond the first pair of saws at which point it terminates in a forwardly and upwardly inclined end 32^a. The other trip block 32^c begins at the terminal of block 32 and is arranged in a plane parallel with the plane of block 32 in the path of the free roller carrying end of the bar 39. The inner end of the block 32^c is inclined rearwardly and upwardly and projects rearwardly beyond the terminal of block 32 to provide for the lowering of one bar simultaneously with the elevation of the other, and the turning of the log at this point after the saws 17 and 18 have completed their operation, and said turning positions the log for engagement by the saws 19 and 20.

When the log is secured in the position shown in Fig. 1 the carriage is started by moving the lever 14 in the proper direction to cause the disk 11 on the shaft 12 to engage the disk 9 whereby the drum is turned in the proper direction to wind the cable thereon and cause the carriage to move forward. During this forward movement of the carriage the log comes in contact with the saws 17 and 18 which cut two slabs from the sides thereof. The continued forward movement of the carriage causes the free end of the bar 39 to engage the trip block 32^c and the free end of bar 38 to pass off block 32 whereby the log is given a quarter turn and the uncut sides thereof brought into position for engagement with the saws 19 and 20 which cut slabs therefrom, leaving the tie in completed condition. The further forward movement of the carriage causes the upper end of the lever 28 to engage a trip bar 33 which forces its lower end outward and disengages the spur 27 from the tie thereby releasing the tie which drops to the bottom of the mill. The further forward movement of the carriage brings it into engagement with the reversing lever 16 which is thereby moved into dotted line position shown in Fig. 1 and through the rod or bar 15 forces the disk 11 into engagement with the operating disk 10 and thereby reverses the rotation of the drum and moves the carriage backward into load-

ing position when another log may be placed therein and the above described operation repeated.

It is obvious that the travel of the carriage is variable and may be changed to suit different kinds of timber and that the mechanism for driving the carriage may be changed and any suitable saw mill carriage drive used if desired.

If desired, a log lifting and centering apparatus A may be employed, such, for instance, as is shown in detail in Fig. 7 of the drawings and applied in Fig. 3, and which is designed to balance the load so that upon turning the log the weight will be equally distributed, and which also insures the tie being always cut from the center or heart of the log. This apparatus as here shown comprises a table 45 which is mounted to slide vertically below the loading end of the structure beneath the carriage 2, and is preferably provided at its opposite edges with notches or recesses 46 which engage guides 47 on the frame of the supporting structure, which permits said table to move vertically and be held against longitudinal or lateral movement. Depending from this table preferably near opposite ends thereof are rack bars 48, with which are meshed pinions 49 carried by a shaft 50, the ends of which are mounted in suitable bearings in one end bar and in the cross bar, respectively, of the supporting frame of the structure. An arm 51 is fixed to the shaft 50 and is connected by a link 52 with an operating lever 53 which projects beyond one side of the structure in position to be readily engaged by the operator for turning the shaft to raise or lower the table 45.

A log receiving and supporting member 54 is here shown in the form of a trough mounted for longitudinal movement on the table 45, said log holder being preferably provided on its lower face with rollers 55 mounted in suitable bearings for guiding the holder on said table and permitting it to reciprocate thereon. A bracket 56 is secured to one end of the table 45 and a coiled spring 57 is connected at one end to said bracket and at its other end to the log holder 54, and it is designed to yield and permit said holder to move longitudinally on said table a predetermined distance and to return said holder to normal position after the table has been lowered and the member 54 disengaged from the log. In the operation of this lifting and centering mechanism a log is rolled onto said holder 54 from a skidway B, and the lever 53 is then actuated to turn the shaft 50 in proper direction to cause the pinions on said shaft to move the rack bars 48 upward, carrying with them the table 45 whereby the log is raised and held in proper position for engagement by the pins 25 and 27 of the carriage 2. The rollers 55 permit the holder 54 to move forward while these points are being driven into the log and after the log has been properly centered the lever 53 is released and the table 45 with the holder 54 thereon moves downward by gravity into normal position, and the spring 57 exerts its tension to return the holder to initial position ready for the reception of another log.

We claim as our invention;

1. The combination of a supporting structure having a track, a log carriage mounted to travel on said track, longitudinally spaced saws disposed in the path of said carriage, rocking log engaging means carried by said carriage, longitudinally movable laterally spaced rods connected with said log engaging means, and means on said supporting structure for alternately engaging and actuating said rods for rocking said log engaging means and turning the log on the carriage at a point between the saws.

2. The combination of a supporting structure having a track, a log carriage mounted to travel on said track, pairs of longitudinally spaced saws disposed in the path of said carriage, rocking log engaging means carried by said carriage, vertically movable rods connected with said means, and cams on said supporting structure for successively engaging said elements for rocking said log engaging means and turning a log on the carriage at a point between said pairs of saws.

3. The combination of a supporting structure having a track, a log carriage mounted to travel on said track, log engaging elements at opposite ends of said carriage, one of said elements being revoluble and the other slidable in a plane at right angles to the plane of movement of said revoluble member and cam actuated means for rocking said revoluble member at predetermined intervals.

4. The combination of a supporting structure having a track, a log carriage mounted to travel on said track, log engaging elements at opposite ends of said carriage, one of said elements comprising a revoluble shaft extending through one end of said carriage and having plates fixed to its opposite ends, one of said plates being provided with a plurality of spurs, vertically movable rods connected with the other plate on opposite sides of said shaft, means on said supporting structure for alternatingly depressing said rods to rock said plates and the other log engaging element comprising a single spur slidably mounted in the other end of said carriage to move in a plane at right angles to the first mentioned log engaging member.

5. The combination of a supporting structure having a track, a log carriage mounted to travel on said track, pairs of longitudi-

nally spaced saws disposed in the path of said carriage, trip blocks disposed in parallel planes laterally spaced from each other, one of said blocks being arranged in advance of the other, said blocks having their inner ends inclined in opposite directions, rocking log engaging means on said carriage, vertically movable bars connected with said rocking log engaging means and having their free ends arranged to engage said trip blocks whereby said log engaging means is rocked to partially turn a log, said blocks being arranged to cause the logs to be turned after passing one pair of saws and before reaching the other pair.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JOSEPH W. BECK.
JOSEPH W. REID.
RAYMOND W. SKINNER.

Witnesses:
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HUGH HARRIS.

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