

(No Model.)

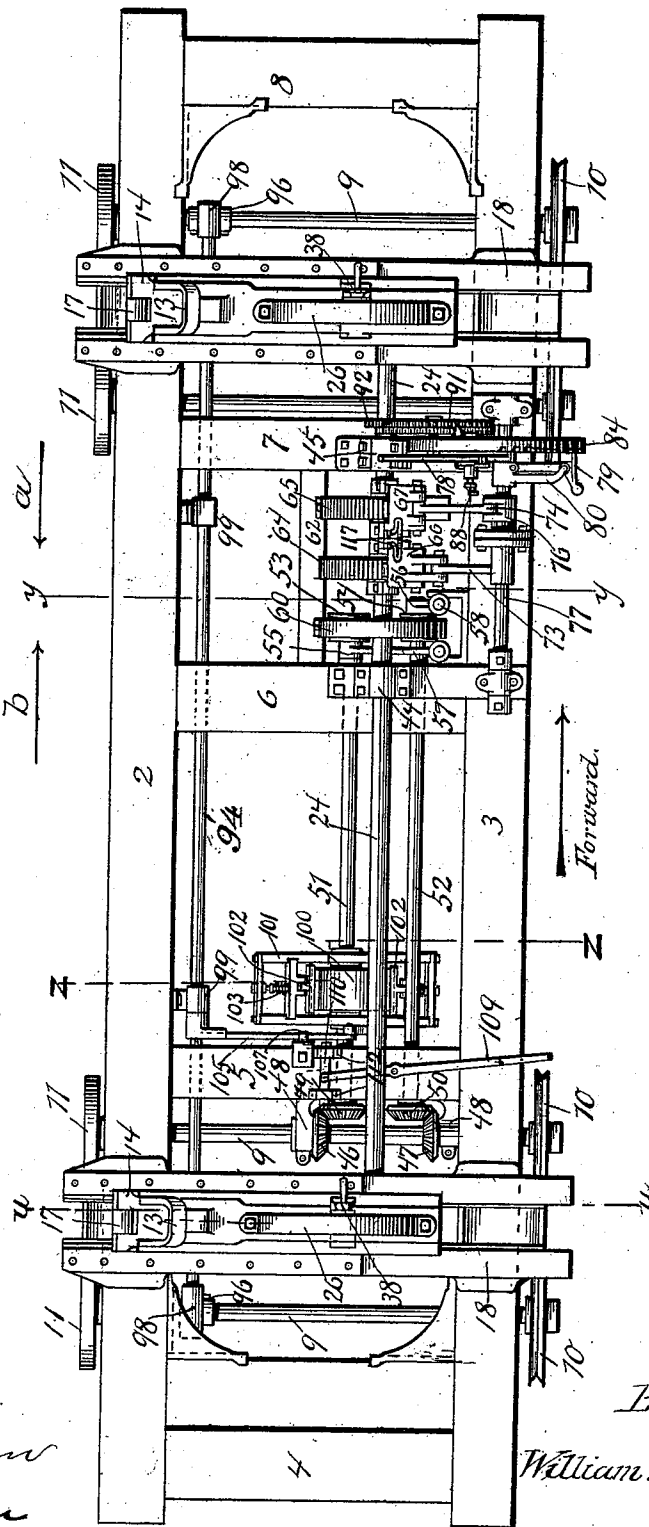
5 Sheets—Sheet 1.

W. A. WILKINSON. SAWMILL SET WORKS.

No. 511,573.

Patented Dec. 26, 1893.

Fig. 1.



Witnesses:

J. Jensen
F. C. Lyon
118

Inventor:

William A. Wilkinson.

By *Paul Mervin* att'ys.

W. A. WILKINSON.
SAWMILL SET WORKS.

No. 511,573.

Patented Dec. 26, 1893.

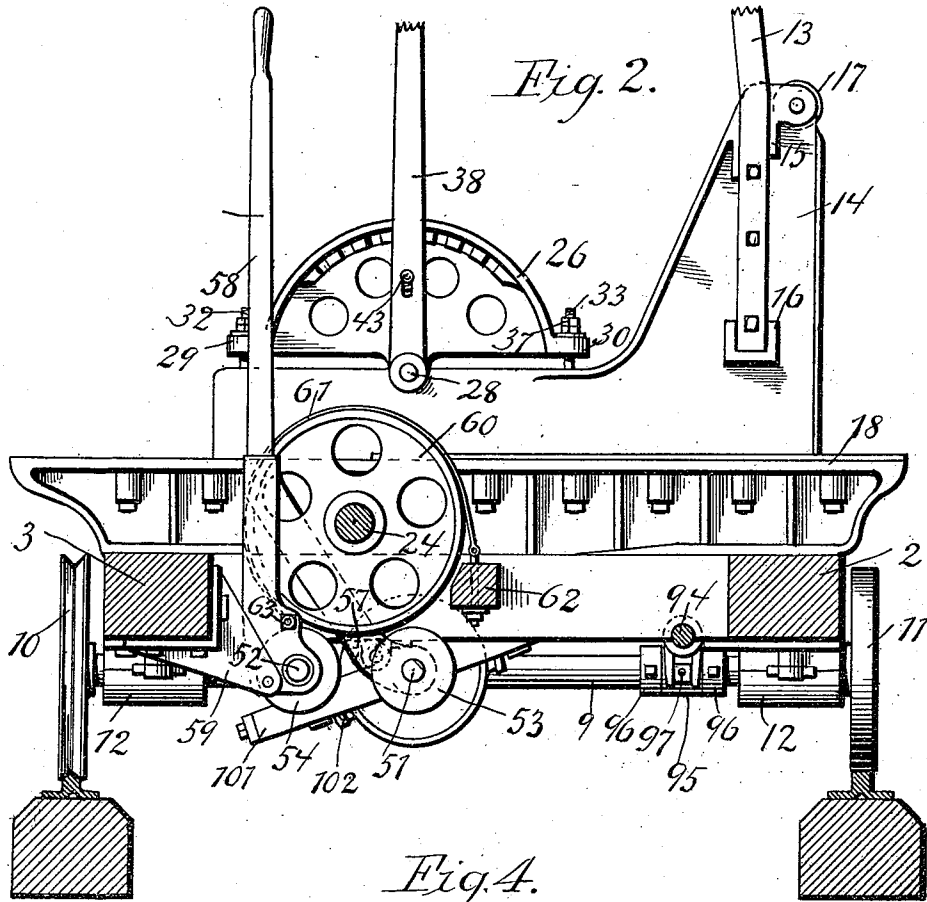


Fig. 2.

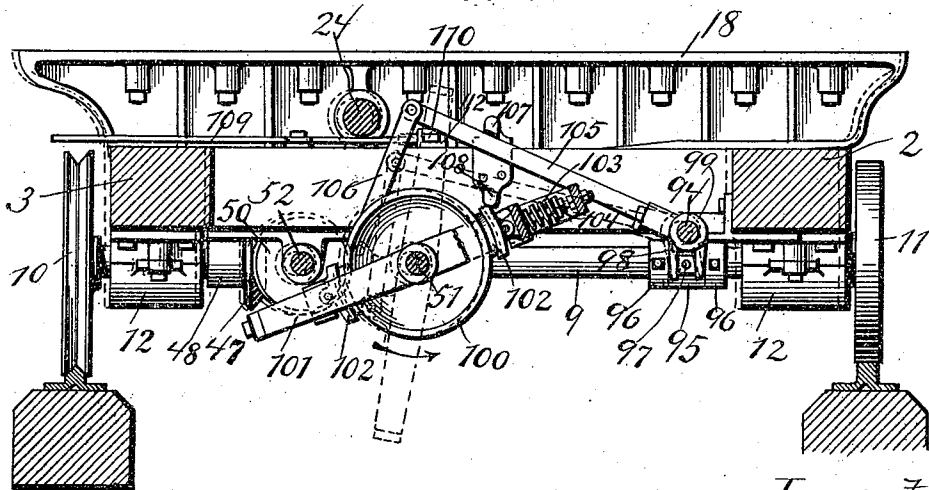


Fig. 4.

Witnesses.

J. Jerrew.
F. H. Lyon

Inventor.

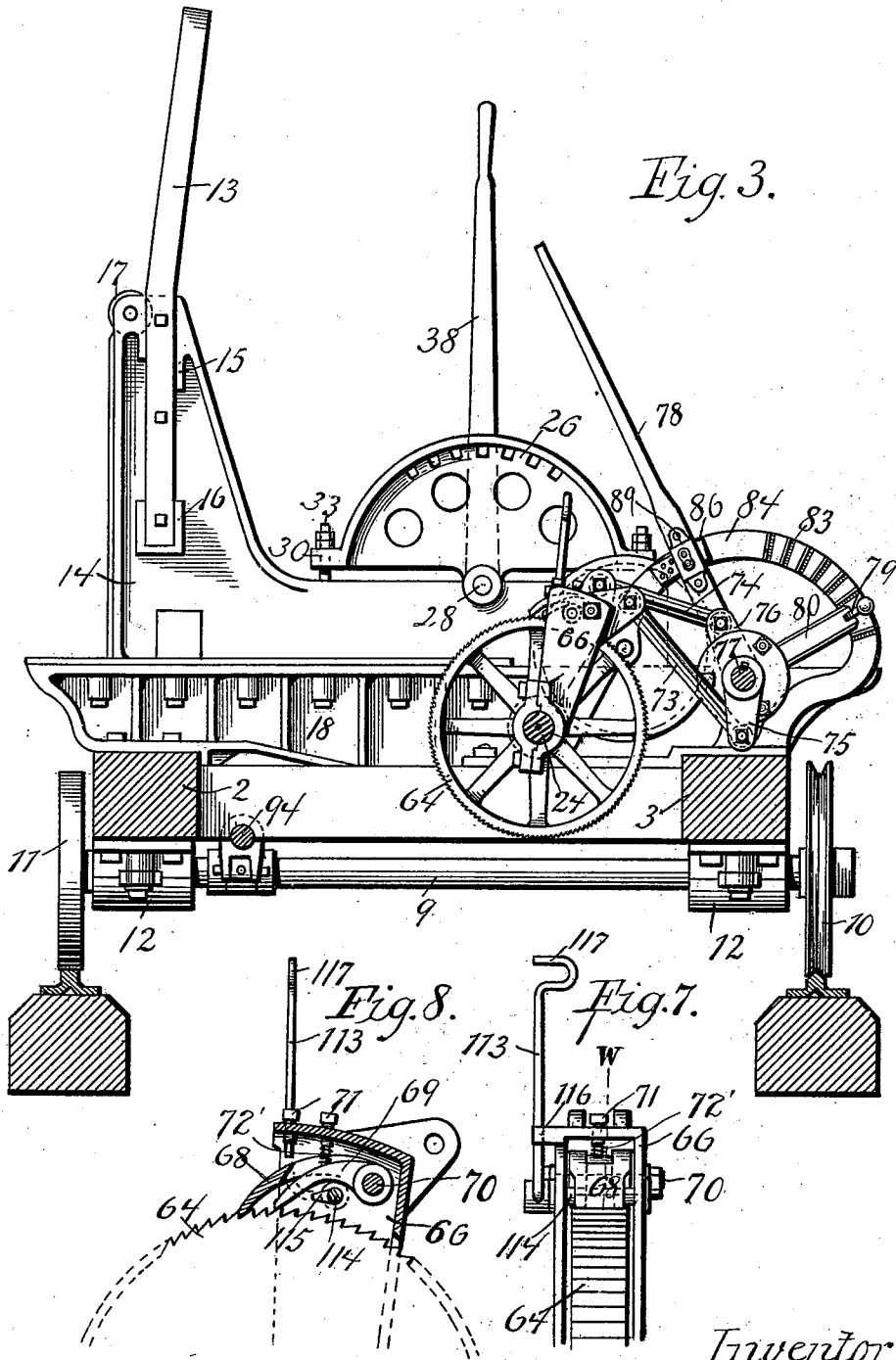
William A. Wilkinson

By Paul & Merwin att'ys.

W. A. WILKINSON.
SAWMILL SET WORKS.

No. 511,573.

Patented Dec. 26, 1893.



Witnesses.

J. Jensen
F. H. Lyon

Inventor:

William A. Wilkinson

By Paul Merwin att'ys.

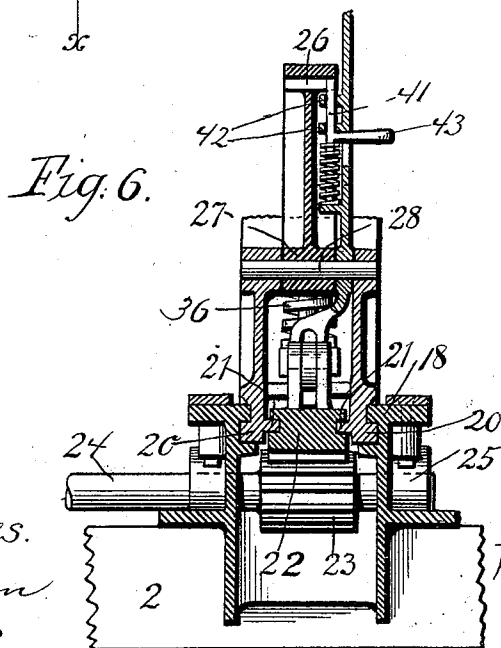
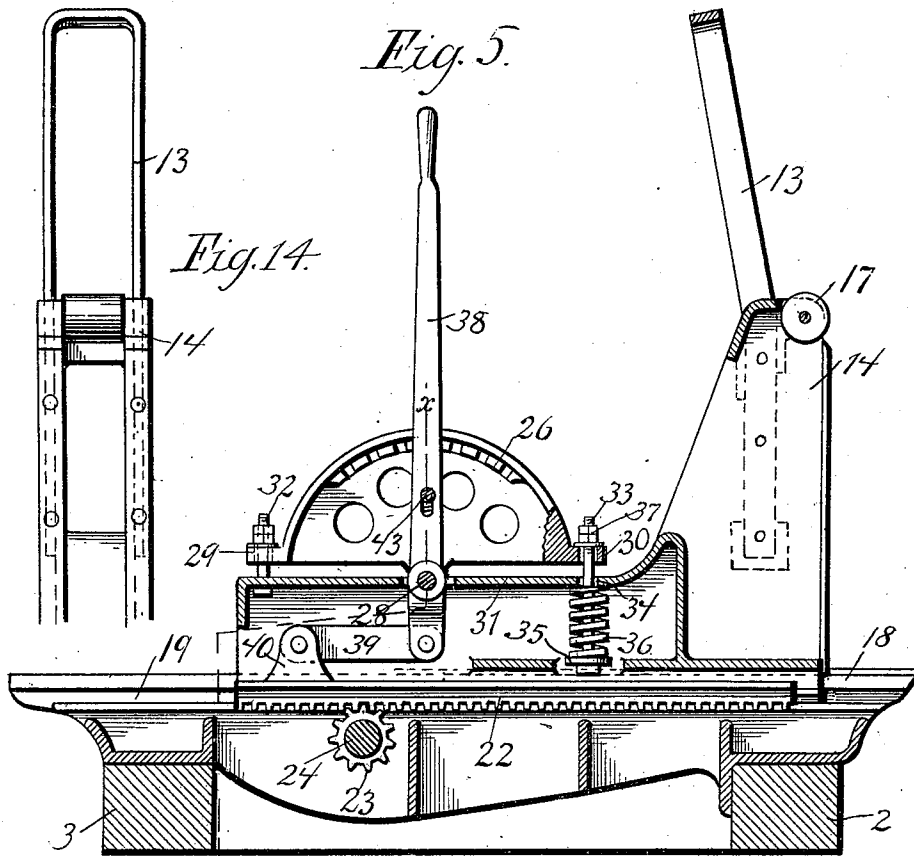
(No Model.)

5 Sheets—Sheet 4.

W. A. WILKINSON.
SAWMILL SET WORKS.

No. 511,573.

Patented Dec. 26, 1893.



Witnesses.

Jessen
F. Lyon

Inventor:

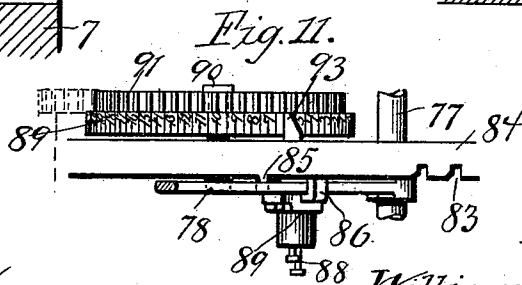
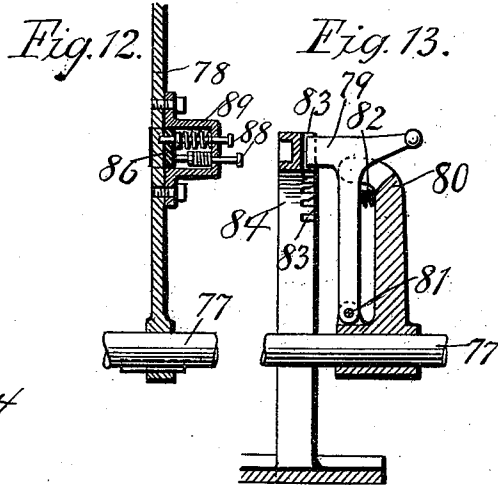
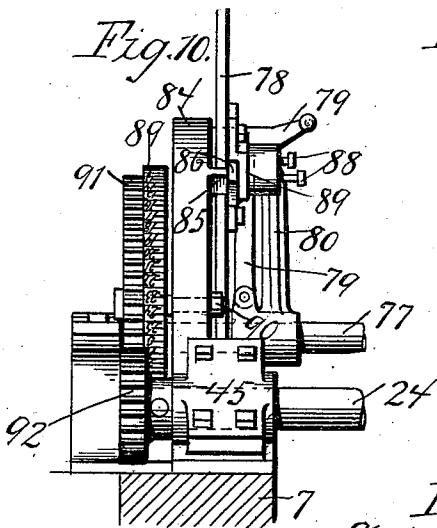
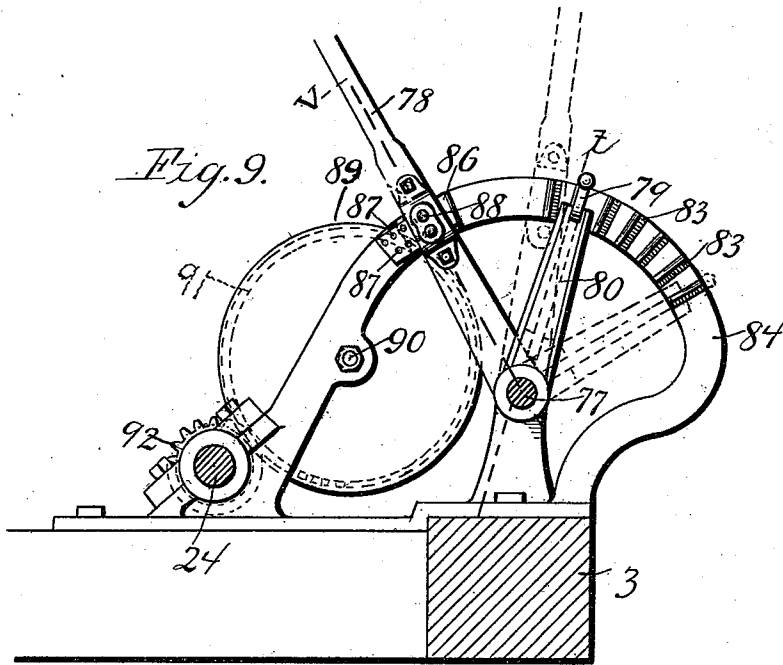
William A. Wilkinson.

By Paul Merim Atty.

W. A. WILKINSON.
SAWMILL SET WORKS.

No. 511,573.

Patented Dec. 26, 1893.



Witnesses
J. Jensen.
F. E. Lyon

Inventor:
William A. Wilkinson
 By *Paul G. Mendenhall* Attys.

UNITED STATES PATENT OFFICE.

WILLIAM A. WILKINSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO
SMITH & RICHARDSON, OF SAME PLACE.

SAWMILL-SETWORKS.

SPECIFICATION forming part of Letters Patent No. 511,573, dated December 26, 1893.

Application filed January 16, 1893. Serial No. 458,551. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. WILKINSON, of Minneapolis, in the county of Hennepin, State of Minnesota, have invented certain
5 Improvements in Sawmill-Setworks, of which the following is a specification.

My invention relates to log carriages and the objects of the invention are to provide an improved feed device for regulating the cut,
10 an improved knee with a tapering attachment, and further to provide means whereby the knee is adapted to yield slightly when a log is thrown upon the carriage; and the further object which I have in view is to generally
15 perfect, simplify and cheapen log carriages and render the operation of the same more convenient and less arduous.

The invention consists in general in the constructions and combinations hereinafter
20 described and particularly pointed out in the claims and will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of a log carrier embodying my invention. Fig. 2 is a cross section thereof, enlarged, and taken on the line
25 $y-y$ of Fig. 1 and looking in the direction of the arrow indicated by a . Fig. 3 is a similar cross section on the line $y-y$ of Fig. 1 but viewing the same from the position of the arrow
30 b . Fig. 4 is a cross section on the line $z-z$ of Fig. 1. Fig. 5 is a vertical cross section on the line $u-u$ of Fig. 1. Fig. 6 is an enlarged detailed section on the line $x-x$ of
35 Fig. 5. Fig. 7 is an enlarged detail front view showing the pawls of the advancing ratchet wheel. Fig. 8 is a section on the line w of Fig. 7. Fig. 9 is an enlarged side view of the feed or advancing lever and its quadrant, and
40 also shows the registering wheel. Fig. 10 is a front view of the same. Fig. 11 is a plan view thereof. Fig. 12 is a sectional detail on the line v of Fig. 9. Fig. 13 is a section on the line t of Fig. 9, and Fig. 14 is a detail front
45 view of the knee loop or extension.

As shown in the drawings 2 and 3 represent the side beams or sills of the carriage which with the cross pieces 4, 5, 6, 7 and 8 make up
50 a very strong frame. This frame is mounted upon the wheels 10 and 11 arranged in pairs upon the cross shafts 9 shown, which shafts

roll in the bearing boxes 12 provided upon the undersides of the sills 2 and 3. I have shown the carriage provided with two sliding knees but it is only necessary to duplicate the parts
55 or extend the same to adapt my invention for use with three or more knees. The knees are made hollow and of considerable breadth and have the usual open front sides in which the log holding dogs are arranged. As my in-
60 vention does not include these dogs they are omitted from the drawings.

As shown in Figs. 3, 5 and 14, each knee is provided with a vertical extension loop 13, the upper part of which is preferably bent
65 back at a slight incline. The ends of the loop are fastened to the sides 14 of the knee standard by suitable bolts and are held firmly between the lugs 15 and the lug sockets 16 provided on said sides. These extensions dif-
70 fer only from those commonly used in their exact construction which I consider better. The usual corner roll 17 is placed in the upper end of the knee, to prevent the log striking thereon. The knee is adapted to slide in
75 the transverse base plate 18 formed as a truss and having the grooves 19 to receive the flanges 20 on the bottom of the knee. Projecting from the inner side of the knee are the straight ribs 21 which form the guides
80 for the sliding rack 22, grooved as shown in Figs. 5 and 6, and meshing with the pinion 23 arranged on the shaft 24, which shaft has bearings in the boxes 25 provided in the base casting 18. Above the low and flat rear part
85 of the knee I provide the quadrant 26, provided with the hub 27 which is pivoted upon the short shaft 28 secured in the knee casting. The quadrant has the projecting ends
90 29 and 30 and its lower edge normally stands considerably above the top 31 of the knee. The flange 29 is adjustably secured to the top 31 by the bolt 32 having locking nuts, as shown, which adjustment is used to line the
95 knee by compensating for any inaccuracy in construction while the other flange is yieldingly secured to the knee by the long bolt 33 extending through the hole 34 in the top 31 and provided with the washer 35 upon which
100 the cushioned spring 36 rests, which spring is adapted to be compressed between this washer and the top. On the upper end of

the bolt are the locking nuts 37 by which the tension of the spring may be regulated. The lever 38 is pivoted on the shaft 28 and projects below into the knee, having its lower end connected by the link 39 to the lug 40 arranged on the rear end of the independently slidable rack. The quadrant is provided with notches and the lever is locked thereon in any desired position by the spring bolt 41, sliding within the lugs 42 on the inside of the lever and having the arm 43 to be depressed by the foot. The lever 38 is used to move the knee forward or back with respect to the other knee, upon the carriage, to throw a taper log into the proper position. The pinion and the rack being stationary when the lever is pulled back, the knee will be drawn back also. The office of the cushioned spring 36 is to allow the knee to yield slightly when struck by a heavy log, thereby relieving the carriage of most of the shock. When the knee is so struck the force is transmitted to the lever 38 and the locking bolt to the quadrant, and the spring yields slightly to permit a slight rise of the quadrant, the rear end of which is forced down by the pressure on the locking bolt. When the log comes to rest the spring immediately draws the quadrant back into its normal position thereby throwing the knee forward into the proper line. For moving the knees backward and forward when a log is taken on or thrown off, I connect the shaft 24 bearing the two pinions for the two knees, to the shaft of the carriage wheel, the connection being made by a friction device to be controlled by the man on the carriage. As shown best in Figs. 1 and 2, the shaft 24 extends between the knees and is secured on the frame in boxes 44 and 45. On the wheel shaft or axle 9 I provide the bevel gears 46 and 47 adapted to slide back and forth on the shaft and to revolve therewith. These gears are secured to the frame by the collar bearings 48, fastened thereon, and they mesh with the beveled gears 49 and 50 keyed to the shafts 51 and 52 respectively, which revolve in bearings arranged on the under side of the bar 5, (not shown.) The opposite ends of the shafts are provided with the small friction pulleys 53 and 54 respectively, and the shafts are supported in the bearing sleeves 55 and 56 provided in the lower ends respectively of the levers 57 and 58 which are pivoted (see Fig. 2), close to their lower ends, suitable blocks or lugs 59 being provided on the frame therefor. The handles of the two levers are for convenience thrown into line by carrying back the lower part of the lever 57. As the carriage is being moved forward toward the saw and after a log has been secured thereon, the knees may be moved forward by drawing back the lever 58 to throw the friction pulley 54 against the large friction wheel 60 arranged on the pinion shaft 24 connected with the racks as before described. To return the knees after a log has been finally disposed of,

the lever 57 is used, except in cases where the knees are returned while the carriage is being moved back, in which case the lever 58 would again be used as its movement would then be reversed. When a log has been thrown upon the carriage and moved forward the proper distance by this means, the shaft 24 is stopped by the strap brake 61, fastened on the short bar 62 of the frame and having its other end secured in the shoulder 63 of the lever 58 and applied by throwing the lever forward, when the friction pulley thereof is moved away from the large friction wheel. After this the friction device remains unused until the log has been cut and the last piece thrown from the carriage. For regulating the cut I provide the two large ratchet wheels 64 and 65 on the shaft 24 and for each of which I arrange an arm or hood 66 and 67 journaled on the shaft and each having two pawls 68 and 69 pivoted on a stud 70 within the hood. Set screws 71 are arranged in the hood to limit the throw of the pawls which are arranged at unequal distances with respect to the teeth of the ratchet wheel and are pressed down by the springs 72' on said screws 71. On each hood I arrange a lug or lugs 72 upon which are pivoted the links 73 and 74. The lower ends of these links are pivoted on the short arms 75 and 76 respectively, which arms are secured upon a short shaft 77 longitudinally arranged on the sill 3 and to which the feed lever 78 is also secured. Upon the movement of this lever backward, the hood or arm 66 will be moved forward to revolve the shaft 24 while the other hood will be drawn back. This movement may be sufficient for a thin cut and the lever may be allowed to rest until the cut has been completed. If a thicker cut is required the lever is thrown both ways so that the movement of the hood 67 forward throws out the knees still farther. The thickness of the board cut from the log therefore depends upon the movement and the throw of the lever 78 and in order to nicely regulate the cut I provide an adjustable stop 79 carried on the arm 80. A detail of this device is shown in Fig. 13. The stop has a hammer shape and is pivoted at 81 on the inner end of the arm and is held forward in the slotted outer end of the arm by a spring 82 which may be compressed when it is desired to change the position of the stop in the notches 83 of the curved frame piece 84. A lug 85 (see Figs. 10 and 11) limits the forward throw of the lever. To obtain a closer adjustment I employ a stop block or heel 86 provided with a number of alternately arranged holes 87 and adapted to be secured on the lever by the spring pins 88 arranged in the strap 89, as shown. These pins are not in line with one another but vary by a little less than the distance between opposite holes 87 in the blocks. The block projecting from the rear side of the lever therefore strikes the stop 79 instead of the lever.

It will be seen that when the cut is finished

and the knees are to be drawn back the pawls must be disengaged from the ratchet wheels 64 and 65. I therefore provide a hand-bar 113 in connection with each hood, the same bar being attached to a short shaft 114 projecting through the hood and provided with a lifting wing 115 beneath the two pawls. A stop 116 is arranged on each hood for its bar, and each bar is provided with a loop 117 which, as the two bars are arranged on the inner sides of the hood, come close together and form a complete hand loop so that both bars may be grasped and drawn back together to lift the pawls of both ratchet wheels before the operator pulls back the friction roll lever to return the knees.

To aid in setting the cut or changing the same, and to serve as a register, I preferably provide the wheel 89 secured on the stud bolt 90 projecting from the frame 84 and marked in inches and fractions of an inch. A large gear wheel 91 is secured on the wheel 89 and meshes with the pinion 92 arranged on the shaft 24. This pinion with the other parts is of such size that the movement of the registering wheel tallies exactly with the movement of the two pinions. A fixed reading point 93 projects from the frame 84 across the face of the figured wheel.

The whole carriage must be drawn back laterally away from the saw each time the carriage is returned after a complete cut, to prevent the log striking the saw. For this purpose I provide the mechanism shown in Figs. 1 and 4 where 94 represents a rock shaft journaled in two or more boxes 99 firmly secured in the frame of the carriage. On the shafts or axles at the ends of the carriage are the collars 95 prevented from moving endwise thereon by fixed collars 96. Each collar 95 is provided with the lug 97 embraced between the prongs of an arm 98 secured upon the end of the rock shaft. A movement of this arm which is attached to the carriage will shift the carriage upon the axles. On the shaft 51 is a wide friction pulley 100 about which I arrange the frame 101 journaled on the shaft and carrying the two brake shoes 102 pressed against the pulley with considerable force by the springs 103, the tension of which may be adjusted by means of following nuts 104. A long lever 105 is attached securely to the rock shaft 94 and is connected with one side of the frame 101 by a pivotal link 106. Two stops 107 and 108 are arranged upon the timber 5 to limit the throw of the lever 105. When the carriage starts back the shaft 51 and the pulley wheel 100 are revolved in the direction of the arrow in Fig. 4, thereby throwing the clutch frame into the dotted position and drawing down the lever 105 to move the arms 98 and throw back the carriage. After reaching this position the brake shoes slip upon the friction pulley. The forward movement of the carriage immediately operates the friction pulley in the opposite direction, thereby return-

ing the clutch part and the long lever and shifting back the carriage so that nothing is lost on the next cut. It is sometimes necessary to return a log when only partially cut or sawed. In such a case it is necessary to hold the carriage in place and to this end I provide the horizontal lever 109 pivoted on the beam 5 and to the bolt or bar 110 sliding in the boxes 112 and adapted to move in underneath the upper end of the lever 105 to prevent its being pulled down when the carriage is returned and the friction pulley revolved.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with the frame or carriage, of knee bases transversely arranged thereon, the knees slidably arranged in said bases respectively, an independently movable rack for each knee, a pinion shaft and pinions engaging said racks and operated by the movement of the carriage, a quadrant pivoted on each knee, a spring connection between said quadrant and its knee, a lever pivoted on the knee and to the rack thereof, and a lock arranged on said lever to engage said quadrant, all substantially as and for the purpose specified.

2. The combination with the frame of transverse knee bases arranged thereon, the knees slidably arranged on said bases, a rack bar slidably arranged in the lower part of each knee, a shaft and pinions thereon to engage said racks, a quadrant 26 centrally pivoted upon each knee, a lever 38 having a lock to engage said quadrant and pivoted on the knee, a pivotal link connecting the lower end of said lever with said rack bar, a stop for the rear end of the pivoted quadrant, a bolt 33 attached to the forward end of the quadrant and a cushioning spring provided on said bolt and engaging the under side of the knee, substantially as and for the purpose specified.

3. The combination with the frame of the transverse guide or base piece provided with grooves 19, of the knee having the flanges 20 extending into said grooves, and also provided with the ribs 21, the rack bar slidably arranged on said ribs, the shaft 24, the pinion 23 thereon to engage said rack, the low flat rear part of the knee, the short shaft 28 secured thereon, the quadrant 26 pivoted on said shaft and having the projecting ends 29 and 30, the adjustable stop bolt 32 connecting the rear end of the quadrant with the knee, the bolt 33 provided with the cushioning spring 36, together forming a yielding connection between the quadrant and the knee, the lever 38, the spring lock arranged thereon and adapted to engage said quadrant, the lower end of said lever projecting into the lower part of the knee, a lug or lugs 40 arranged upon said rack bar, and the link 39 pivotally connecting the same with the lower end of said lever, substantially as and for the purpose specified.

4. The combination with a log carriage knee, of a loop extension 13 therefor, retaining lugs arranged upon the sides of the knee and between which the lower ends of said loop are secured, substantially as described.

5. The combination with the knee, provided with the retaining lugs 15 and 16, of the loop extension 13 bent backwardly at its upper end, the lower ends of said loop secured between said lugs, and a corner roll 17 on the upper end of the knee, substantially as described.

6. The combination with the carriage frame, of the wheel shafts whereon the same is supported, the knees transversely movable upon said carriage, the knee racks, a shaft 24 having pinions engaging said racks, the friction wheel 60 arranged upon said shaft, the shafts 51 and 52 provided with small friction pulleys 53 and 54 respectively, the levers 57 and 58 having sleeved ends wherein said shafts are supported, said levers pivoted upon said frame, and beveled gears provided upon said

shafts and one of the wheel shafts, whereby the shafts 51 and 52 are driven in opposite directions by the movement of the carriage, and whereby said knees may be moved forward or back during said movement of the carriage, substantially as described.

7. The combination with the carriage, of the knees movable thereon, a shaft 24 through the medium of which said knees are operated, ratchet wheels arranged upon said shafts pawls for said ratchet wheels, a lever 78 connected with said pawls, a quadrant frame, an adjustable stop thereon, the adjustable stop block provided on said lever and having a series of pin holes 87, and spring pins provided on said lever for locking said block, substantially as described.

In testimony whereof I have hereunto set my hand this 30th day of December, 1892.

WILLIAM A. WILKINSON.

In presence of—

C. G. HAWLEY,
FRED. S. LYON.