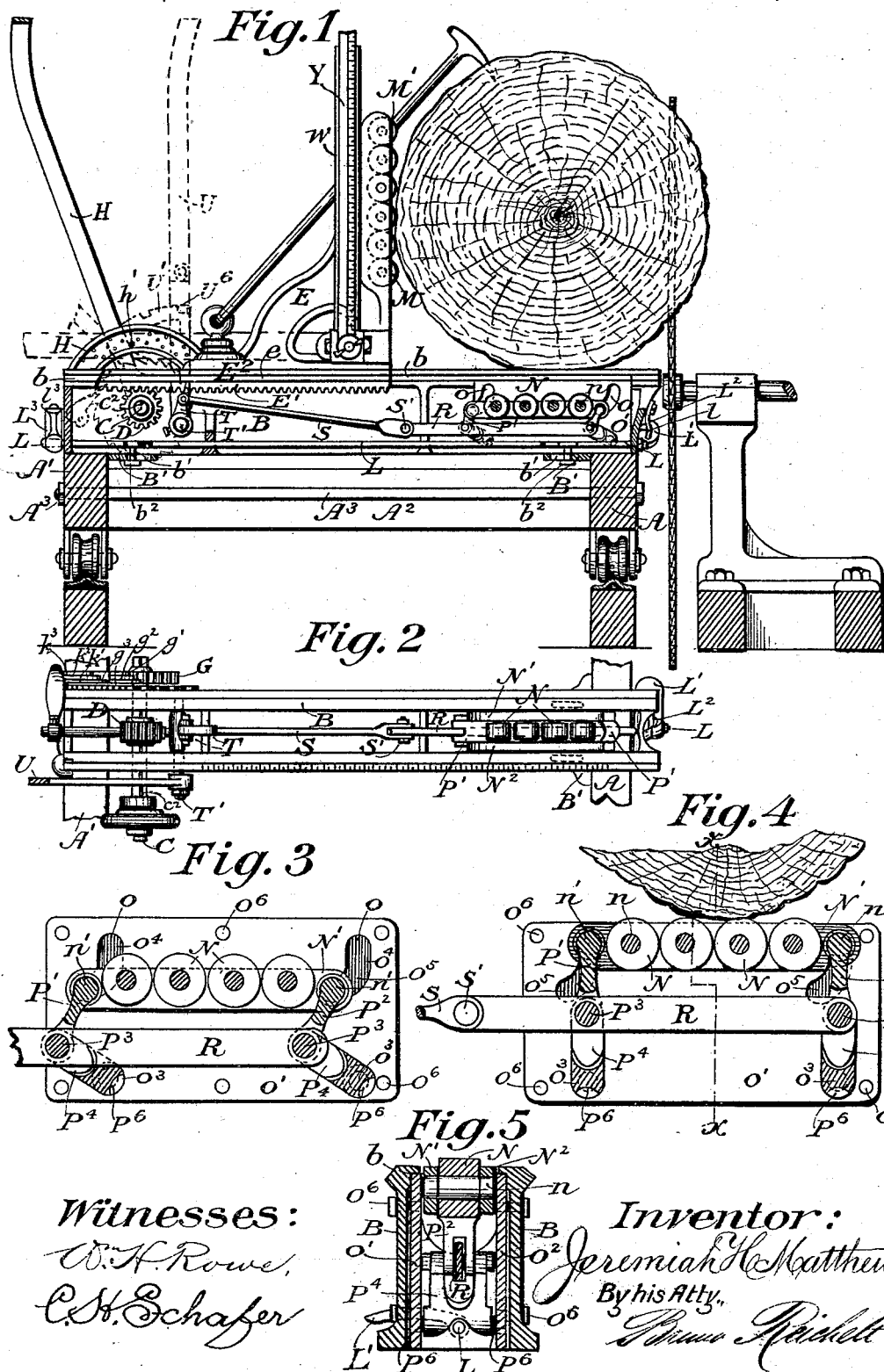


2 Sheets—Sheet 1.

No. 553,351.

Patented Jan. 21, 1896.



(No Model.)

2 Sheets—Sheet 2.

J. H. MATTHEWS.  
SAWMILL HEAD BLOCK.

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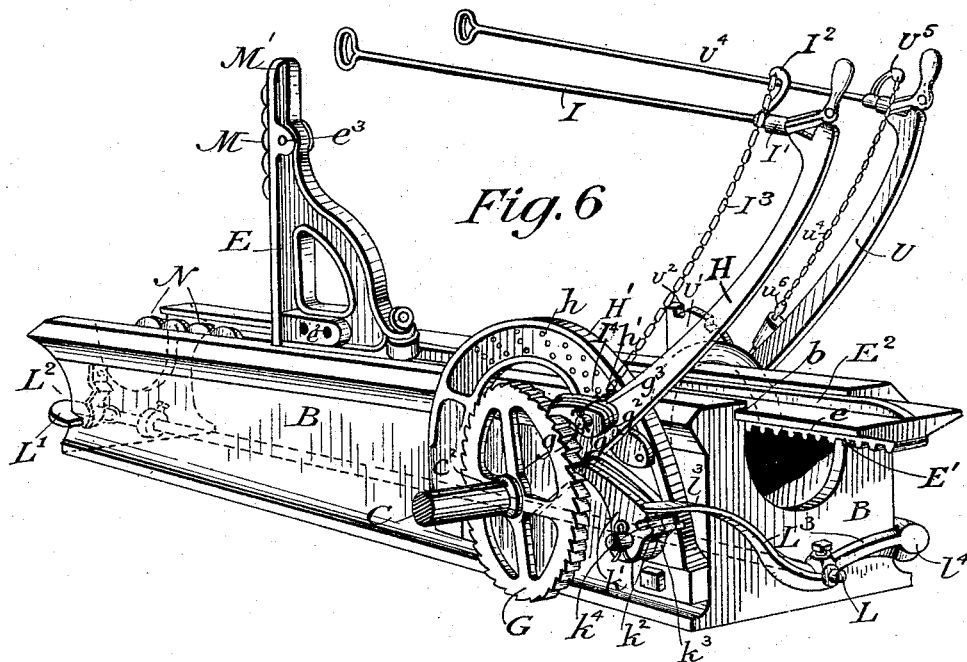


Fig. 6

Fig. 7

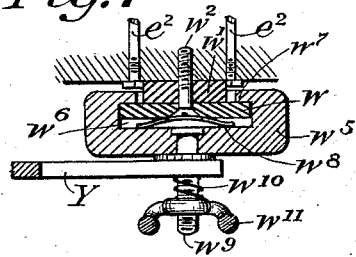


Fig. 8

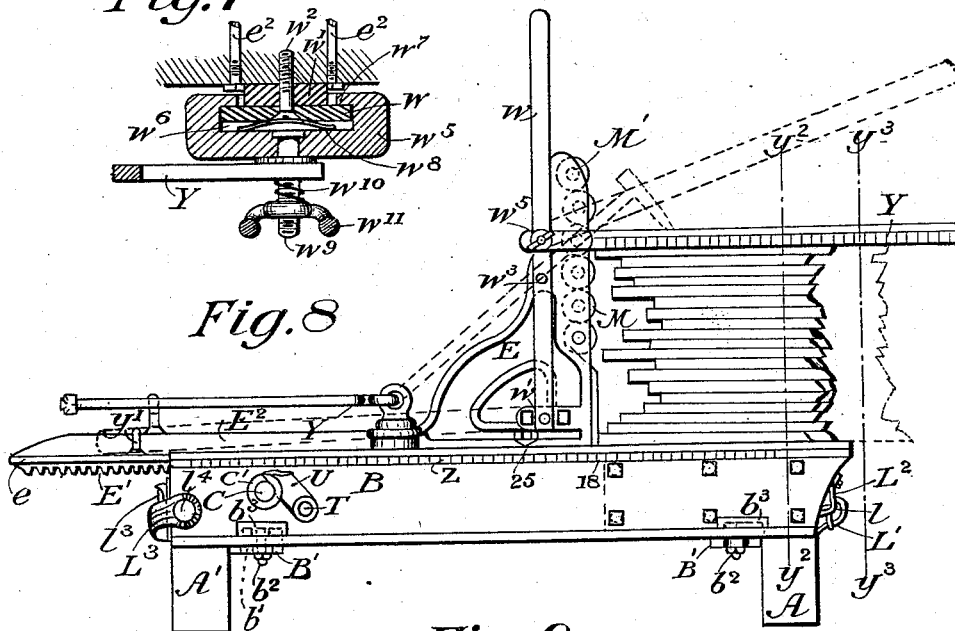
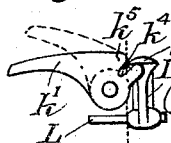


Fig. 9



Witnesses

Wm. N. Rowe,  
C. H. Schaefer.

Inventor:—

Jeremiah H. Matthews.

By his Atty.,

Wm. Pickell

# UNITED STATES PATENT OFFICE.

JEREMIAH H. MATTHEWS, OF SOUTH BEND, INDIANA.

## SAWMILL HEAD-BLOCK.

SPECIFICATION forming part of Letters Patent No. 553,351, dated January 21, 1896.

Application filed March 22, 1895. Serial No. 542,805. (No model.)

*To all whom it may concern:*

Be it known that I, JEREMIAH H. MATTHEWS, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Sawmill Head-Blocks, of which the following is a specification.

My invention relates more especially to the head-block mechanism for turning and feeding the log upon the head-block base and for operating the knee to move it backward or forward thereon from the saw side of the carriage, by which means the sawyer can operate the head-block unaided and by a simple mechanism lift the log and relieve it of frictional resistance, thus allowing the log to be turned to any desired position for operating upon it with such little exertion that a child may move it.

My invention also relates to a novel attachment of a measuring-scale to the head-block or knee to move therewith and thereon to properly gage and measure the boards upon the head-block for edging the same, all as will hereinafter appear.

In the accompanying drawings, Figure 1 is a transverse sectional side elevation of a sawmill head-block carriage and saw with my improvements applied thereto; Fig. 2, a plan of the head-block base with the knee removed therefrom, showing some of my improvements thereon; Fig. 3, an enlarged detail of one of the side plates carrying the antifriction-bearing block and showing the latter depressed beneath the face-line of the head-block base; Fig. 4, a similar view of the same with the antifriction-bearing block in its raised position to elevate the log above the said face-line of the base and showing a fragment of a log resting thereon; Fig. 5, an enlarged cross-section through the head-block shears at the line *xx* of the antifriction-bearing block; Fig. 6, a perspective of the head-block, enlarged, from the rear side of the carriage, showing the mechanism for operating the knee and for operating the antifriction-bearing blocks; Fig. 7, an enlarged horizontal sectional detail of the connection between the head-block knee measuring-rod and standard for supporting and adjusting the same thereon; Fig. 8, a side

elevation similar to Fig. 1 of the head-block and knee with the measuring attachment in position thereon and carrying a load of un-edged boards in position for measuring and adjusting in full lines and by dotted lines in position, properly adjusted to the saw-line; and Fig. 9, a detail elevation of the detent-pawl and its operating-arm.

The carriage-frame, comprising longitudinal frame-pieces *A A'*, is connected by end cross-pieces *A<sup>2</sup>* and tie-bolts *A<sup>3</sup>* in any well-known or preferred manner. A pair of head-block bases *B* are placed transversely upon the carriage at suitable distances from each other to rest at their ends upon the longitudinal side pieces *A A'* and be capable of adjustment either toward or away from each other to suit the length of the work held thereon, a knee-operating shaft *C* passing longitudinally of the carriage and through bearings *c* in the rear end of each of the head-block bases, and also fitted by a slot and key *c<sup>2</sup>* with small gear-wheels *D* supported and adjustable thereon, which engage with a rack-bar *E'* upon the rearwardly-projecting arm *E<sup>2</sup>* of a knee *E*, having guide-rabbets *e* fitted in grooves *b* in the sides and below the faces of the said head-block bases, the rotation of the said shaft and gear-wheels serving to move the knees of both head-blocks backward and forward upon the head-block bases coincidently to evenly feed both ends of the log to the saw.

The head-blocks are each held from lateral displacement upon the said frame-pieces by flat adjustable plates *B'*, each having straight bearing edges projecting below the bases and slots *b'* to receive clamping-bolts *b<sup>2</sup>* at each end and upon opposite sides of the bases, the heads of the bolts fitting in recesses or pockets *b<sup>3</sup>*, cast in the under side and inner edges of the said bases and held securely from turning therein. The bolts passing through the slots in the ends of said plates are securely clamped after they have been adjusted to the inner face of the frame-pieces, thus holding the head-block securely at any adjusted position to compensate for any shifting or warping of the carriage-timbers or track-frames and adapting the extreme forward end of the head-block bases to be held or adjusted at all times in close proximity to the face of the

saw, thus enabling the head-block, bed-face, and knee to hold the log firmly until the last board is sawed therefrom.

The shaft C is rotated at suitable intervals  
5 by means of a ratchet-wheel G and a set of  
pawls  $g' g^2 g^3$ , carried by a pin  $g$  upon a hand-  
lever H, freely turning upon the shaft C and  
guided by a segment-plate H', secured to the  
side of the head-block bases. A series of holes  
10  $h$ , being located intermediately and concentrically in said segment-plate, serves, by  
means of a stop-pin  $h'$  fitted in a suitable one  
of said holes, to limit the forward movement  
of the lever H and consequently the distance  
15 moved by the knee at each vibration of the  
said lever. The pawls  $g' g^2 g^3$  are of different  
lengths and will fall successively behind each  
tooth of the ratchet-wheel, thus enabling the  
lever to actuate the said ratchet-wheel and  
20 knee a more limited or closely-graduated distance  
with ratchet-teeth of a given size than  
could be obtained by a single pawl. The  
upper end of the lever H is curved slightly  
forward and provided with a handle, which,  
25 if occasion requires, may be used from the  
far side of the carriage by an assistant, but  
is preferably operated by a rod I, swiveled  
to a block I', hinged to the upper end of the  
handle H and extends forward across the  
30 carriage and above the head-block within  
reach of the head sawyer, who can thus dispense  
with the use of an assistant.

A crank-arm I<sup>2</sup> at the swiveled end of the  
rod I is connected by a chain I<sup>3</sup> and bail I<sup>4</sup>  
35 with the pawls  $g' g^2 g^3$ , the bail-bar passing  
through vertically-elongated holes in said  
pawls, thus permitting the said pawls to work  
freely and independently and also allowing  
them to be lifted all together by the chain  
40 and crank when the rod I is turned in its  
swivel bearing-block I' and when it is desired  
to push or move the head-block knee  
back from the saw or forward side of the machine.  
A set of detent-pawls  $k' k^2 k^3$ , also of unequal  
45 length for a like purpose, are employed  
to prevent the accidental backward movement  
of the ratchet-wheel and knee, and these  
pawls must also be lifted from the front or  
saw end of the head-block when the knee is  
50 pushed back by the sawyer without the aid  
of an assistant. This is accomplished by the  
following-described means: A rod L passes  
longitudinally from end to end and at the  
lower part of the base B and supported in  
55 bearings in the ends of said base. A foot-lever  
L' is secured to the forward end of said  
rod and is turned at an angle close to the end  
corner of the base B within reach of the foot  
of the sawyer, by which means he may rock  
60 the rod with his toes or foot to either lift the  
detent-pawls from engagement with the teeth  
of the ratchet-wheel or lower them to engage  
with said teeth. A spring-plate L<sup>2</sup>, fastened  
to the end of the shears, has an angular elbow  
65  $l$ , which bears against either the under  
or the upper side of said foot-lever L' and

holds it in either its raised or depressed position.

The set of detent-pawls  $k' k^2 k^3$  each have  
a transverse slot or notch  $k^4$  to receive the  
70 blade  $l^3$  of a lever L<sup>3</sup>, secured to the rear end  
of the rod L, a counterbalance-weighted arm  
 $l^4$  of the lever L<sup>3</sup> opposite the blade serving  
to keep the blade raised normally to drop the  
detent-pawls onto the ratchet-wheel. When  
75 the foot-lever L' is pressed down, the blade  $l^3$   
presses in the notch  $k^4$  and lifts the pawls  
from the ratchet-wheel, and when the foot-lever  
and blade are lifted the blade will press  
beneath an overhanging or projecting lip  $k^5$   
80 of the pawls and push them back with a positive  
movement to their engagement with the  
ratchet-wheel.

In order that the log may be easily turned  
upon the head-block to receive the saw in the  
85 required line of cut, either to square the log  
or to cut the boards therefrom in a plane  
which will best avoid the knots and thus give  
the sawyer increased facilities for quickly  
turning the log and working out of it the  
90 greatest possible number of square feet of  
clear lumber, I provide suitable antifriction-  
blocks upon which the log may rest and which  
are preferably constructed and combined  
with the head-block in the following-described  
95 manner:

The knee E is formed with a recess in its  
face-board transversely at regular intervals  
to receive bearings at the ends of friction-  
rollers M, adapted to fit said recesses and project  
100 from the face of the knee sufficiently to  
provide a back bearing for the log, and turn  
freely in their bearings, when the log is turned  
by means of cant-hooks, or in any well known  
or preferred manner.

The upper end of the knee is inclined rearwardly  
and an upper roller or more is placed  
rearwardly somewhat out of line of the lower-  
most rollers whose journal centers are placed  
in a straight line, preferably in a vertical  
110 plane; but in the larger sizes of mills the line  
of rollers may be inclined rearwardly somewhat  
to accommodate bigger logs without an  
increase in the height of the knee.

A set of rollers N, (four are shown,) whose  
115 short projecting journals  $n$  are supported in  
side bearing-plates N' N<sup>2</sup>, the ends of the said  
plates being supported upon pins  $n'$ , projecting  
from the ends of toggle-links P' P<sup>2</sup>, which  
pass through the said plates and project into  
120 slots O formed in the ends of side plates O'  
O<sup>2</sup> secured to the base by screw-bolts O<sup>6</sup> which  
pass through the sides of the base and are  
tapped into the side plates. The lower ends  
of the links P' P<sup>2</sup> have pins P<sup>3</sup> which pass  
125 through a link-bar R and also through the ends  
of double link-arms P<sup>4</sup> P<sup>4</sup> fitted or clamped  
upon fixed pivot-pins  $p^6$  at opposite ends of the  
said roller-bearing block, the fixed outwardly-  
projecting ends of the pins  $p^6$  passing into  
130 bearing-sockets O<sup>3</sup> in the side plates O' O<sup>2</sup> at  
points immediately below the upper ends of

the slots O, hereinbefore referred to, and which, being more particularly described, consist of straight vertical portions O<sup>4</sup>, as stated, located immediately over the sockets O<sup>3</sup> to receive and direct the rollers with their blocks straight up at the latter part of their upward movement, and the said slots O having receding curved lower ends O<sup>5</sup>, which allow the end pins n' of the toggle-links P' P<sup>2</sup> to drop back with the receding bar R to allow the rollers N to pass beneath the plane of movement of the rack-arm of the knee and also admit of a sufficient movement of the toggle-links to secure the full mechanical power which may be derived from the forward thrust of the link-bar R. It will be observed that the upper links P' P<sup>2</sup> are slotted or cut away at their lower ends to receive the link-bar R, and the lower arms P<sup>4</sup> P<sup>4</sup> are doubled at each end to work upon the sides of said link-bar R, thus to allow free and ample movement of said bar in operating the links and bearing-blocks aforesaid.

The link-bar R is connected by a rod S and pin S' with a double-armed crank T, secured to a shaft T', supported in the side walls of the base B, and a hand-lever U secured to one end of said shaft T' is supported to vibrate upon a segment-plate U' bolted to one side of the head-block base and fitted with stops u<sup>2</sup>, which receive a catch u<sup>6</sup>, movable upon the said lever, and a chain u<sup>4</sup>, connecting the catch u<sup>6</sup> with a rod U<sup>4</sup>, swiveled to a hinged block u<sup>5</sup> upon the upper end of said hand-lever, and projecting across the machine within reach of the sawyer, admits of the operation of said lever and antifriction-bearing blocks from either side of the sawmill-carriage, thus dispensing with the employment of an additional man at the far side of the head-block. The stops u<sup>2</sup> in the segment permit the lever and the roller-bearing blocks to be held fixedly at any desired position.

In edging lumber the use of a hand rule or rod has been found inconvenient, inaccurate, and tedious, as the boards have to be piled one upon the other, the edge at each end of the board having to be moved out to the saw-line one at a time, and as the ends of the boards are of unequal widths the wide ends sometimes being at one end and sometimes at the other end of the carriage, and the crooked, knotted, and mutilated intermediate edges being of such irregularity that the boards must be laid and distributed upon the head-block in a pile or "load" having an irregular or jagged outer or saw-line edge, as shown in Fig. 8 of the drawings. In order that this may be done to the best advantage, it is usual for the mill-men to stand one at each end of the load and measure the rough boards as they are piled, the forward man calling out the distance measured to the rough edge in each distance and the back man calling out a corresponding or suitable corrected measurement, which latter may be adopted and called back

again, thus establishing the place of adjustment of each board. To expedite this work, I have fitted upon the knee, or, if preferred, upon the head-block or upon the carriage adjacent to the head-block, a movable standard W, held uprightly and preferably attached to the knee, as shown in Fig. 8, at its lower end to a filling-block w' between the heads of the bolts e<sup>2</sup> by a screw w<sup>3</sup>, the upper end of the standard being securely held to the knee by a screw w<sup>8</sup> upon a filling-block near the bolt-head e<sup>3</sup>, similar to the lower attachment of the standard just described. A slide-block w<sup>5</sup> receives the standard w between its vertical slot w<sup>6</sup> and side flanges w<sup>7</sup>, and two plate-springs w<sup>8</sup>, fitted within the said slot w<sup>6</sup>, press against and hold the said block at any required position upon the standard. A rule Y with a scale measuring from the face of the knee to the end of the rule is secured by a pivot-bolt w<sup>9</sup> to the slide-block w<sup>5</sup>, a spring w<sup>10</sup> placed between the rule Y and the set-nut w<sup>11</sup> serving to hold the rule at any position at which it may be placed horizontally, vertically, and at an angle, as shown in Fig. 8, respectively, by full, dotted, and broken lines.

When the boards are being placed to form the load, the rule Y is held in a horizontal position upon the upper side thereof. The first board being measured and adjusted, the rule is tipped up at an angle, as shown by broken lines, Fig. 8, and a second board pushed beneath it, thus lifting the slide-block w<sup>5</sup> upon the standard a sufficient distance to allow the rule to be placed flat upon the top board, and so on until the load is complete, and the rule may then be placed either in a vertical position or turned back to a horizontal position upon the knee, its free end dropping behind the pin y' upon the knee until it is to be again placed in use. No rules are mislaid, broken or inaccurately held for measurement, and the work of placing the load upon the head-block is greatly expedited.

It will be understood that the boards are piled upon the base back of the forward end to the dotted line y<sup>2</sup> y<sup>2</sup>, (shown in Fig. 8,) and measured as just described, and then dogged, and the knee moved forward to a point indicated by the scale z upon the base in the usual way until the point determined by the rule will correspond with a like number on the scale, thus bringing the load forward exactly to the saw-line y<sup>3</sup>, ready for edging in the usual way.

The antifriction-roller bearing for lifting the log from the head-block base may be located at any convenient or preferred place upon the carriage, either immediately adjacent to either both of the head-blocks or intermediately thereof; but the arrangement herein shown and described possesses the most economical, convenient, and effective construction and arrangement obtainable. The toggle-joints and their connections admit of the largest logs being lifted from the

rest or base of the head-block by a single hand movement with but little effort, and then by means of cant-hooks or other usual appliances may be quickly turned to suit the work or the required line of cut.

By pressing with the foot upon the lever the detent-pawls, or, if connected therewith, the moving pawls, may be either lifted from or placed in engagement with the ratchet-wheel and held in either of such positions described. The hand-levers with their hinged and swiveled extension-rod connections for both operating the levers, pawls or detents from the saw side of the carriage greatly facilitate the work, and give the sawyer complete and sole control, requiring no assistance to perform all the work required of feeding, lifting, and turning the log and pushing or moving back the knee or knees to receive a new log.

I claim as my invention and desire to secure by Letters Patent—

1. In a saw mill head block, the combination with the base plate, the knee carrying a rack bar, the gear pinion and ratchet wheel supported upon a shaft at the rear end of the base plate, a detent and pawl to engage the ratchet wheel and a rocking shaft supported longitudinally in bearings at its ends upon said base plate having an oscillating foot lever at the forward end and an oscillating trip lever at the rear end of said shaft for actuating said pawl, substantially as described.

2. A saw mill carriage having a head block upon which the log rests while being sawed in combination with a roller bearing adapted to be raised beneath the said log, and above the face of said base when the log is to be turned, and dropped beneath said face when not in use, substantially as described.

3. A saw mill head block comprising a base, a knee adjustable thereon, anti-friction rollers fitted to the face of the knee, and a roller bearing adapted to be raised beneath the said log and above the face of the said base when the log is to be turned, substantially as described.

4. A saw mill head block base in combination with a roller bearing block, toggle links, a connecting rod and a lever for operating the same, substantially as described.

5. A saw mill head block base in combina-

tion with an anti-friction roller block fitted to the forward end, and a crank lever supported upon the rear end thereof and a rod connecting the said roller block and crank lever for reciprocating the said roller block in supporting guides to raise and lower the same, substantially as described.

6. A saw mill head block base in combination with an anti-friction bearing block fitted to the forward end, and a crank lever supported upon the rear end thereof connected with said roller block and a handle bar hinged to the upper end of the said lever and projecting forwardly, substantially as described.

7. A saw mill head block base in combination with an anti-friction bearing block fitted to the forward end thereof, an operating lever connected therewith fitted to the rear end of the base, a segment plate to support said lever in an adjusted position, a handle bar hinged to the upper end of said lever projecting forwardly, and a latch supported upon the lever and operated by the said handle bar to engage with stops upon the segment plate, substantially as described.

8. In a saw mill head block, the combination with an adjustable standard, of a measuring scale adjustable with and adapted to be projected and withdrawn from across the boards to be edged to indicate the line of cut, substantially as described.

9. In a saw mill head block, the combination with the vertically disposed adjustable standard, a slide adjustable upon said standard and a measuring scale or rule supported upon said slide, substantially as described.

10. The combination in a saw mill head block, of the base with the knee adjustable thereon, a standard secured to the said knee, a slide fitted to said standard, and spring for supporting the slide in any adjusted position, and a measuring rule pivoted to the slide and held in the several positions, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JEREMIAH H. MATTHEWS.

Witnesses:

WM. H. ROWE,  
MAMIE GIBBONS.