T. C. Theaker,

Saw-Mill Head-Block.

No 3,411. Patented Jan. 20, 1844.

Fig 1

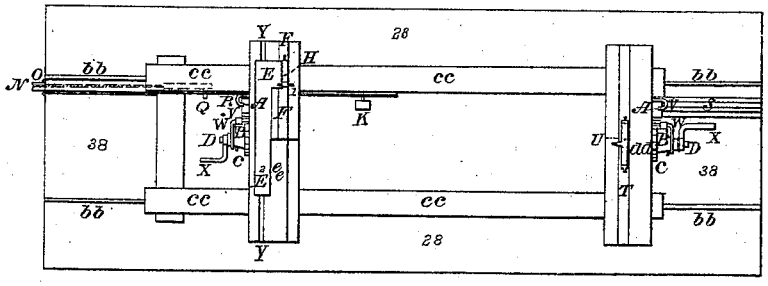


Fig. 2

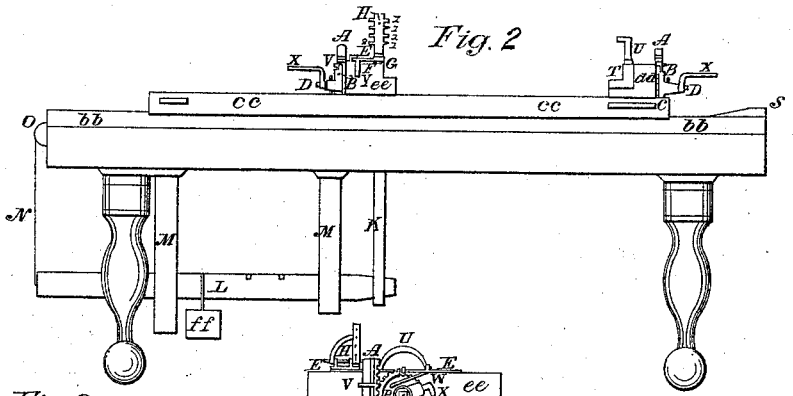


Fig 9

Fig 3

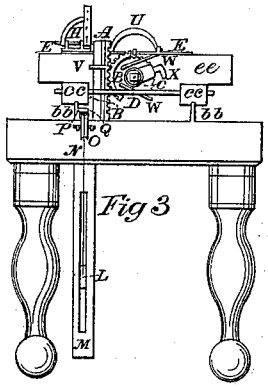


Fig 5

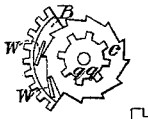


Fig 6

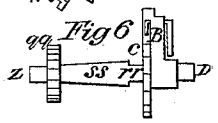


Fig 10

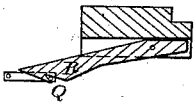


Fig 11

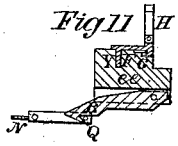


Fig 4

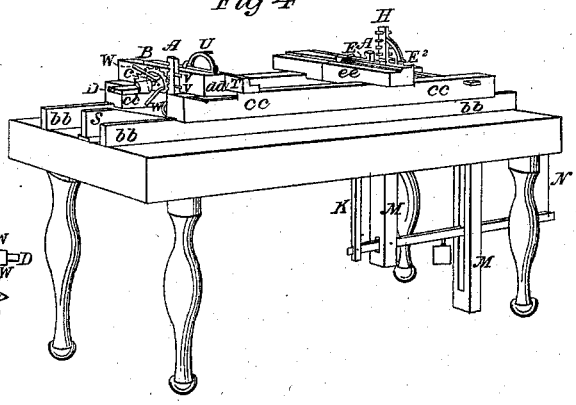


Fig 7

Fig 12

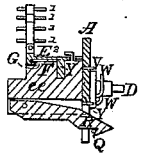
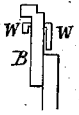


Fig 8



UNITED STATES PATENT OFFICE.

THOS. C. THEAKER, OF BUCYRUS, OHIO.

HEAD AND TAIL BLOCKS OF SAWMILLS.

Specification of Letters Patent No. 3,411, dated January 20, 1844.

To all whom it may concern:

Be it known that I, THOMAS C. THEAKER, of the town of Bucyrus, in the county of Crawford and State of Ohio, have invented a new and improved method of constructing the head and tail blocks for sawmill-carriages in such manner that said blocks set themselves; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a birds eye or top view; Fig. 2, a longitudinal elevation; Fig. 3, a transverse section; Fig. 4, a perspective view; Fig. 5, an inside view of the quadrant dogs ratchet wheel and pinion; Fig. 6, a side view of the quadrant dogs ratchet wheel and pinion; Fig. 7, a view of the inside of the quadrant and dogs; Fig. 8, a side view of the quadrant and dogs; Fig. 9, a side view of the inclined plane and Fig. 10 a side view of the head block hook or trigger as attached to the head block; Fig. 11, section of the head block; Fig. 12, ditto.

The floor of the sawmill represented in Fig. 1 by letters *a a*, the carriage ways represented in Figs. 1, 2, 3 and 4 by letters *b b* and the carriage represented in said figures by letters *c c* I construct in any of the known and ordinary forms.

Tail block.—The tail block represented in the Figs. 1, 2 and 4 by letters *d d* I construct as follows: Length about 5 feet, width 16 to 18 inches, depth 12 or 13 inches and rabbet it in the ordinary form for the reception of the slide on which the end of the log rests when sawing. On the under side of the slide represented in Figs. 1, 2 and 4, letter T, I attach firmly a horizontal metal rack (Figs. 2 and 4, letter E) three feet long, 2 or 3 inches wide and 1½ inches thick with cogs from end to end. On the center of the top of the slide I place an ordinary bale dog (Figs. 1, 2, 3 and 4, letter U) to hold the log in its place. Through the back side of the tail block and reaching forward so as to run in the block in front of the rack attached to the slide I insert a metal shaft (Fig. 6, letters *s s*) 22 inches long and about 2½ inches in diameter. The front end has a journal (Fig. 6, letter Z) 2 inches in diameter and 3 inches long on which it runs directly under the rabbeting; it also has a pinion (Fig. 6, letters *q q*) 8 inches in diameter with cogs which mesh into the cogs of the rack attached to the slide. Immediately at the outside of the head block I attach to this shaft a metal ratchet wheel (Figs. 1, 2, 3, 4, 5 and 6, letter C) of about 12 inches diameter and about 1 inch thick with the periphery cut in teeth. I have a journal (Fig. 6, letters *r r*) 2½ inches in diameter and 2 inches long between the pinion and ratchet wheel and close to the latter. The outer end of the shaft is squared for the purpose of applying a crank (Fig. 3, letter D). The crank is (represented in Figs. 1, 2 and 3, letter X) designed to move the slide back to its place to receive a new log. I insert a metal bearing in the back side of the head block and even with it for the purpose of receiving the journal nearest the ratchet wheel. Upon the outer side of the ratchet wheel I place upon the shaft a metal quadrant (Figs. 1, 2, 3, 4, 5 and 6, letter B) of 90 or 100 degrees, with cogs, radii 9 inches. This is so constructed as to run over the ratchet wheel. I insert in the quadrant 2 metal dogs (Figs. 1, 3, 4, 5, 6, 7 and 8, letter W) that work in the teeth of the ratchet wheel. I attach to the tail block by hooks a metal vertical rack (Figs. 1, 2, 3 and 4, letter A) 2 feet long 3 inches wide and 2 inches thick with cogs meshing with the cogs of the quadrant. It is attached in such manner as not to obstruct its free vertical motion. To the lower end of the vertical rack I attach a metal friction wheel about 3 inches in diameter and 1 inch wide. The hooks by which the vertical rack is held in its place are represented in Figs. 1, 2, 3 and 4, letter V. At the back end of the mill I attach to the floor by pins a metal inclined plane (Fig. 9 and Figs. 1, 2 and 4, letter S) 3½ feet long 12 inches high, ¾ inch wide, 10 inches of the back part horizontal with a flange 4 inches wide at the base. It is attached so that it may be moved to suit the length of the log and to receive at the same time the friction wheel of the vertical rack as the carriage is moved backward to it.

The action of the tail block is as follows: The carriage is drawn backward in any of the known modes, when the vertical rack reaches the lower end of the inclined plane the friction wheel of the vertical rack exceeds the inclined plane; this raises the vertical rack by this operation, the quadrant is set in motion and by the action of the dogs the ratchet wheel is turned and with it

the pinion on the inner end of the ratchet wheel shaft, the cogs of which work into the cogs of the slide on which the log lies whereby the slide is moved. The extent of this motion is regulated by pins placed horizontally in the vertical rack (Figs. 3 and 4). On the return of the carriage the friction wheel descends the inclined plane, the vertical rack sinks by its own weight and turns the quadrant to its proper place. In this direction the dogs pass over the teeth of the ratchet wheel without producing any further motion.

Head block.—The head block (Figs. 1, 2, 3 and 4, letters *e e*) I construct as follows: length, 6 feet; width, 22 inches; depth, 12 or 13 inches and rabbet it in the ordinary form for the reception of the end of the log. Eight inches from the back side of the top of the head block I sink a groove (Figs. 1, 2 and 4, letter *y*) 1½ inches wide 4 inches deep the whole length of the head block. In this groove I insert a horizontal rack (Figs. 1, 2, 3 and 4, letter E²) 3½ feet long 1½ inches wide and 3½ inches deep with cogs from end to end on the lower edge. The upper edge of this rack has a flange 3 inches wide for the purpose of resting and sliding on the head block. At one end for the space of 12 inches the flange is enlarged forward so as to come flush with the back part of the rabbeting of the head block. At the front edge of the enlarged flange I attach by hinges a metal quadrant dog (Figs. 1, 2, 3 and 4, letter H) with 4 metal teeth (Figs. 1, 2, 3 and 4, letter I). On the under side of the enlarged flange I place a metal hook (Fig. 2, letter G) to prevent the rack from rising out of its place. In the center of the head block I cut a saw-carve in the ordinary way extending back to the flange of the horizontal rack. On the same side of the saw-carve with the enlarged flange and directly under the flange I attach firmly a metal plate (Fig. 1, letter F) 3 feet long 2 inches wide and ½ inch thick leaving a space under the front edge to receive the hook attached to the enlarged flange. I insert into the back part of the head block a metal shaft, pinion, bearing, journals, ratchet wheel, quadrant dogs and vertical rack precisely the same as above described in the tail block with these exceptions the shaft is not quite so long, the pinion meshing with the horizontal rack and there is no friction wheel at the lower end of the vertical rack. These different portions of the work are all represented in the figures of the head block by the inner letters as the similar portions of the tail block. I construct a lever about 18 feet long, 8 inches broad and 3 inches thick (Figs. 2, 3 and 4, letter L) to the outer end I attach a rope or chain, the inner end I attach to a pitman (Figs. 2 and 4, letter K). About 24 inches outside the pitman I put a post (Figs. 2 and 4, letter M) through which the lever passes and works as a fulcrum. About 12 feet outside the fulcrum post and about 4 or 5 feet longer than it I place another post (Figs. 2, 3 and 4, letter M) through which the lever passes and works freely up and down in its long mortise. This post is designed simply to steady the action of the lever. The pitman I make of sufficient length to have the upper end reach the bottom of the head block when the opposite end of the lever is pressed down and is 4 inches wide and 2½ inches thick. The upper end of it passes through the floor (Fig. 1, letter K) and comes directly under the vertical rack when the head block is nearest the saw. The rope or chain fastened to the outer end of the lever (Figs. 2, 3 and 4, letter N) passes over a pulley (Figs. 1, 2 and 3, letter O) 8 inches in diameter and into a groove (Figs. 1 and 3, letter P) and runs within 10 feet of the saw when it is attached to a block which works freely in the groove. I secure a horizontal iron pin to this block so as to reach 2 inches beyond the groove (Fig. 1, letter *q*). To the head block I attach a metal hook or trigger (Figs. 1, 3 and 10, letter R). I attach an iron pin to the floor close to the groove and by the side of the hole through which the upper end of the pitman works.

Action of the head block.—On moving the carriage backward the head block hook or trigger catches the horizontal pin attached to the groove block and draws it, the groove block and rope or chain and the outer end of the lever is elevated and the pitman depressed. When the head block reaches the saw the upper end of the pitman is depressed to the floor and the vertical rack stands directly over it, the head block hook or trigger is elevated by the pin near the pitman hole so that it releases its hold upon the horizontal pin attached to the groove block, the outer end of the lever falls suddenly by its own weight, the pitman rises and pushes up the vertical rack, the quadrant meshing with the vertical rack turns and gives a motion to the ratchet wheel shaft pinion and horizontal slide rack which sets this end of the log to its required place. As in the case of the tail block the extent of this motion is regulated by pins placed horizontally in the vertical rack. The extent of the motions of the horizontal slides of both head and tail blocks depend entirely upon the length of the rise and fall of their respective vertical racks. If the one half of the rise and fall of the vertical rack be obstructed the motion of the horizontal slide will be only half what it would be if the vertical rack were allowed its full rise and fall, consequently pin holes through the vertical rack at given distances from

each other will enable the workman by the insertion of pins to give the vertical rack that amount of fall which will produce the desired motion in the horizontal slide.

As before stated the outer ends of the ratchet wheel shaft of both head and tail blocks are squared to receive a crank (Fig. 3, letter D) so that when the horizontal slides have performed their office the crank may be applied, the dogs by means of a string or otherwise drawn off the teeth of the ratchet wheel and the ratchet wheel shaft turned until the horizontal slides are brought to their position for the reception of a new log.

The quadrant dog attached to the horizontal slide of the head block has its teeth driven into that part of the log which is designed to compose the last slab. By this means the quadrant dog when once set does not require alteration until the log is completely sawed.

The weight of the lever in falling gives the propelling power of the horizontal slide of the head block. The lever must be made heavy enough for this purpose by attaching a weight to it (Fig. 4, letters *f f*), the weight is to be moved back or forward on the lever in order to increase or diminish its power as needed.

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

1. The combination of the vertical rack which operates the slide with the pitman and weighted lever operated in the manner substantially as herein set forth.

2. I likewise claim the combination of the vertical rack, segment rack and ratchet wheel operated substantially as set forth by the inclined plane *s*.

THOMAS C. THEAKER.

Witnesses:

WM. P. ELLIOT,

GEORGE PECK.