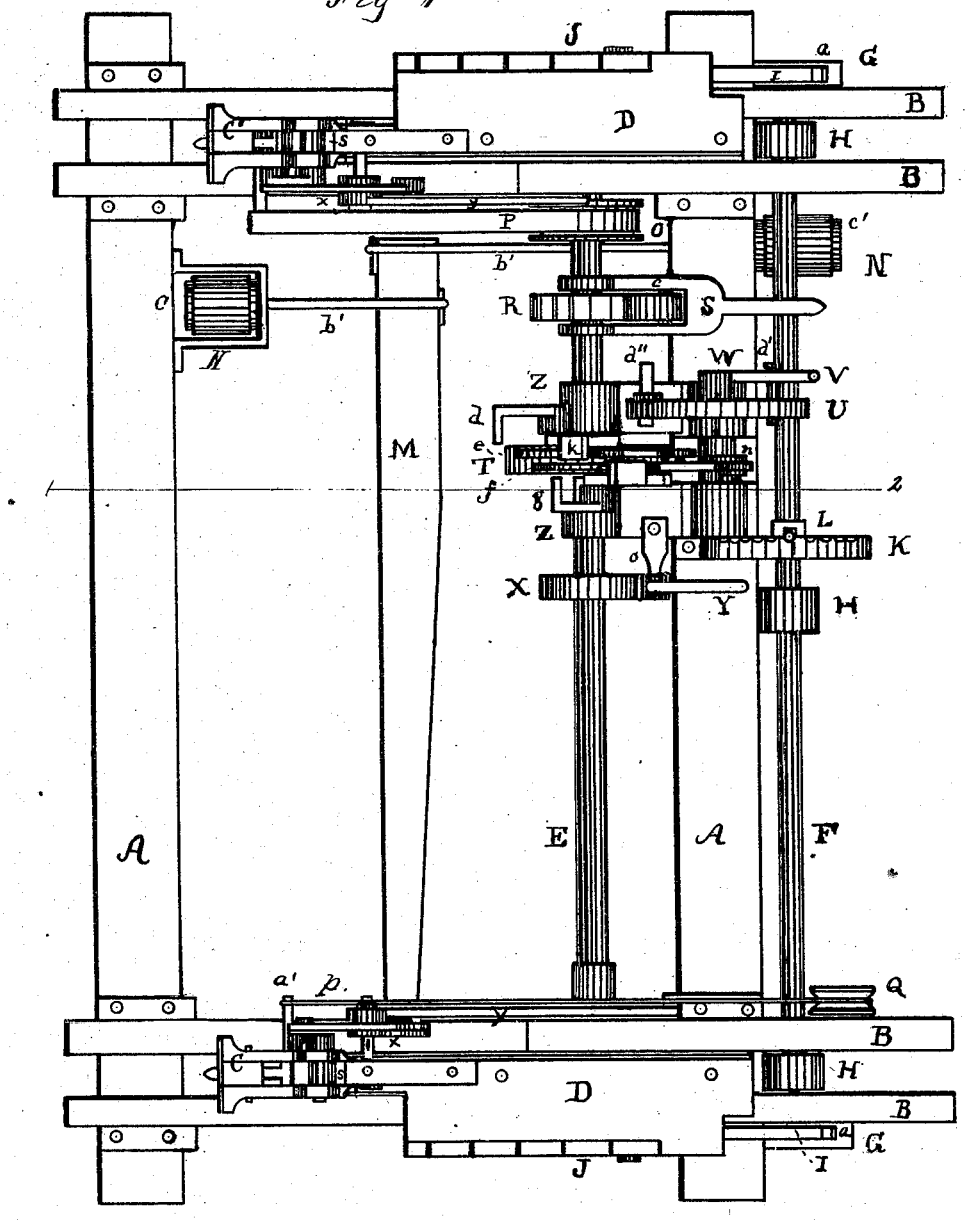
3 Sheets--Sheet 1.

N. SHAW.

Head-Block for Saw-Mills.

No. 161,066. Patented March 23, 1875.

Fig 1



Witnesses.
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3 Sheets--Sheet 2.

N. SHAW.

Head-Block for Saw-Mills.

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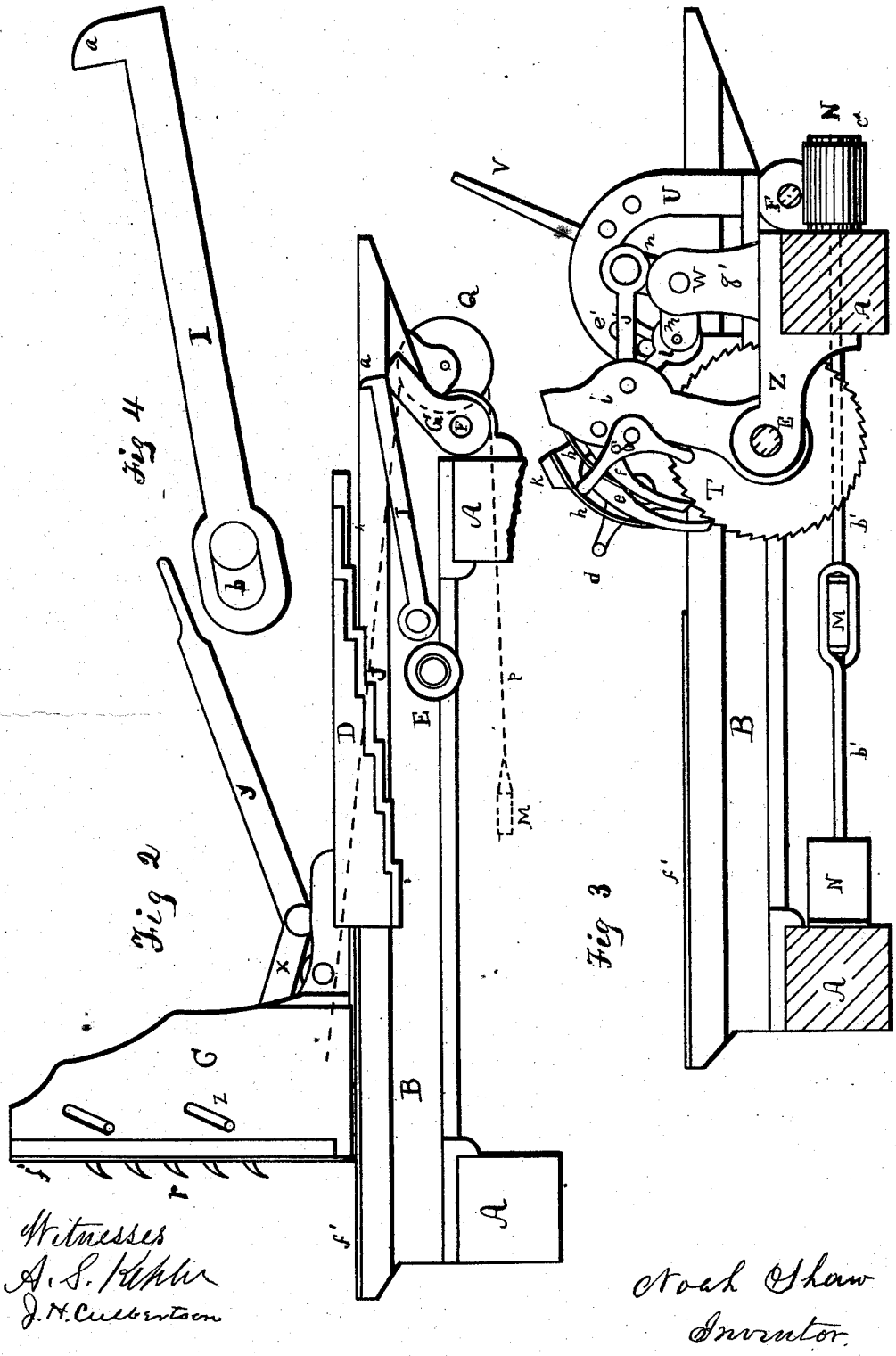

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3 Sheets--Sheet 3.

N. SHAW.

Head-Block for Saw-Mills.

No. 161,066. Patented March 23, 1875.

Fig 5

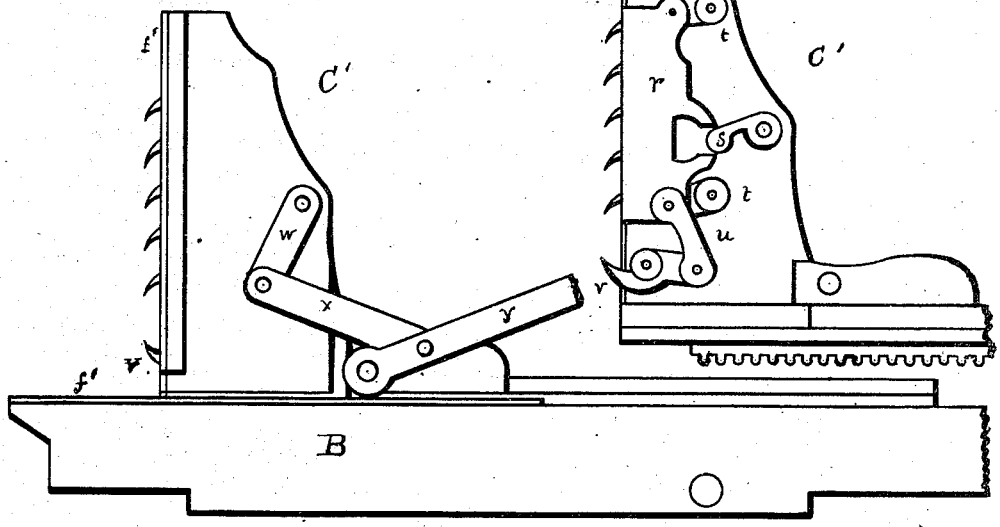


Fig 6

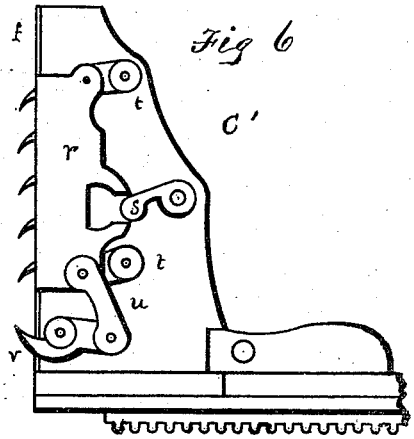


Fig 7

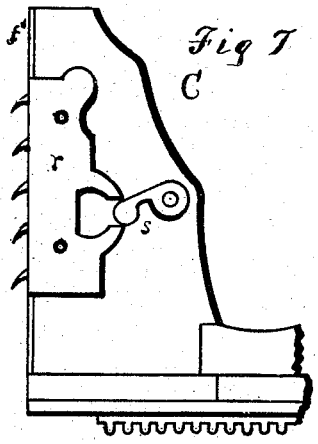


Fig 8

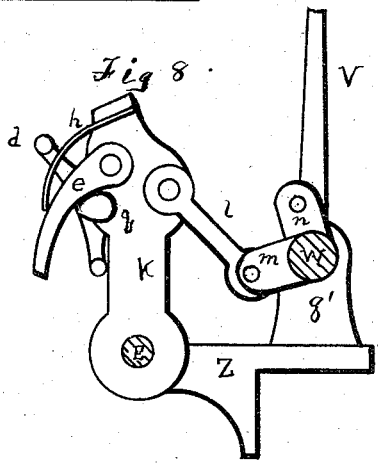
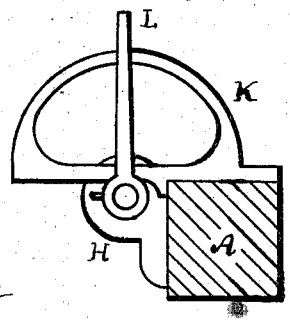


Fig 9



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UNITED STATES PATENT OFFICE.

NOAH SHAW, OF EAU CLAIRE, WISCONSIN.

IMPROVEMENT IN HEAD-BLOCKS FOR SAW-MILLS.

Specification forming part of Letters Patent No. **161,066**, dated March 23, 1875; application filed June 27, 1874.

To all whom it may concern:

Be it known that I, NOAH SHAW, of Eau Claire, in the county of Eau Claire and State of Wisconsin, have invented new and useful Improvements in Head-Blocks for Saw-Mills, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view; Fig. 2, an end view, showing the head-block and parts connected therewith; Fig. 3, a cross-section on line 1 2 of Fig. 1, showing the set-works; Fig. 4, an enlarged detail; Fig. 5, a side view of the head-block and knee; Fig. 6, a side view of the knee, with a portion removed to show the interior; Fig. 7, a similar view, showing a different construction of the knee; Fig. 8, a detail, showing the construction and arrangement of the set-pawls; Fig. 9, a detail.

The object of my invention is to improve the construction of saw-mills in their set-works, dogs, and method of receding the knees; and its nature consists in an improved method for operating the dogs, in so arranging the pawls of the feed-ratchet wheel that each half motion of the lever advances the log, in an improved arrangement for stopping the receding of the knees, and in the several devices and combinations hereinafter described and claimed.

In the drawings, A represents the frame; B, the head-blocks; C C′, the knees or standards; D, the step-plate placed on the rear portion of the knees; E, the main or set-work shaft; F, the rock-shaft operating the hook; G, the cams at the ends of the shaft F; H, the bearings for the shaft F; I, the hooks; J, the steps on the plate D; K, the segment provided with notches or teeth; L, the lever for operating the rocking shaft F; M, the spring-lever; N, the springs; O, the drum or wheel; P, the strap or chain; Q, the sheave or friction wheel; R, the ratchet-wheel; S, the forked lever; T, the feed-ratchet wheel; U, the segment or frame for gaging the lumber; V, the lever; W, the short shaft for operating the feed-pawls; X, the brake-wheel; Y, the brake-lever; Z, the intermediate bearing for the shaft E and for supporting the feed-pawls; *a*, the part of the hook I which engages with the steps J; *b*, the elastic cushion for the hook I; *c*, the pawl of the forked lever S; *d g*, the levers for throwing the feed-pawls *e f* out of contact; *e f*, the feed-pawls; *h*, the springs on the feed-pawls; *k i*, the standards pivoted on the set-shaft and carrying the pawls *e f*; *j l*, pivoted bars or links connecting the standards *i k* with the rock-shaft W; *o*, the pivot for the brake-lever; *p*, the cord or chain connecting the end of the lever M with the end C; *m n*, studs or projections on the rock-shaft W; *q*, the cams on the levers *d g* for throwing the pawls *e f* out of contact; *r*, the dogs; *s*, the arms or projections for raising or lowering the dogs; *t*, the pivoted links in the head-block C′ for operating the dog; *u*, link; *v*, a single tooth moving in an opposite direction, and so connected with the dog as to be operated by it, as shown in Fig. 6; *w*, crank; *x*, bar or link; *y*, the lever for operating the dogs; *z*, inclined slots in the knee C, in which the pins that operate the dogs slide. *a′*, the pin by which the cord *p* is attached to the knee C; *b′*, the straps or bars for connecting the lever M with the springs N; *c′*, the back plates to which the rods *b′* are attached for compressing the springs N; d^1 d^2, the pins for limiting the movement of the set-lever V; *e′*, slot for the pin d^2; *f′*, metal face-plates for the head-blocks and knees; *g′*, the standards supporting the rock-shaft W.

The frame A is made in any suitable manner, and is made to travel backward and forward in any of the well-known modes. The head-block B is made in the usual form, and provided with a steel face, *f′*. The knees C C′ are made sufficiently hollow or open in the upright part for the reception of the dogs, and have also a steel face, *f′*. The horizontal part is provided at the bottom with the usual rack, operated by a pinion located beneath it on the shaft E. The upper part is provided with a plate, D, which projects over the head-block and down at the side thereof, as shown at Figs. 1 and 2. This plate D is provided with notches or steps at the lower edge of the downward-projecting part, which engage with the hook I, so as to stop the receding movement of the knees at any one of the projections or steps J. This is accomplished by means of the rock-shaft F, which is provided with arms

or cams G, located under the hooks I. These cams G are adjusted to raise or lower the hook I, so as to engage with any desired step on the plate D, by means of the lever L and the notches in the segment or frame K. When raised to its highest point, the hook I comes in contact with the end of the plate D, and from that point it may be lowered so as to engage with any of the steps or projections, as desired, thereby limiting the receding movement of the knees to the step for which the arms or cams G are set by the lever L.

The shaft F is supported by any suitable bearings, H, at the rear of the frame. The shaft E has its bearings in the head-blocks, and is provided with additional bearings Z, upon which is located the set-works. The ratchet-wheel T is attached to the shaft E, and at each side of it are pivoted to said shaft vertical arms *i k*, which turn loosely on the shaft E as a pivot. These arms *i k* are each provided with a spring-pawl, which engages with the ratchet-wheel T, and also with small hand-levers, for throwing the pawls out of contact when the knees are to be receded. These hand-levers are provided with a cam, *q*, which lifts the pawls, as shown in Fig. 8, and are also provided with a stop at the lower end, to prevent the turning of the cam too far. The pivoted standards are connected with the rock-shaft W by means of the projections *m n* thereon and suitable links *j l*, and so arranged that the forward movement of the lever V advances the arm or standard *i* and recedes the arm or standard *k*, which movement is reversed when the lever V is drawn back, so that each half-motion of the lever V advances the ratchet-wheel T continuously in one direction.

In order to prevent injury to the spring-pawls and their connections, to the shaft E is attached another ratchet-wheel, R, which is provided with a forked or other suitable lever, S, and pawl *c*, which will receive the thrust of any shock made by rolling logs against the knees, and thereby prevent it from reaching the set-pawls *e f*. This lever is also arranged so that it may be used, if desired, for setting the log up. The shaft E is also provided with a suitable brake-wheel, X, and brake-lever Y, for changing or stopping the receding of the knees at any desired point.

In order to recede the knees a long lever, M, is placed within the frame, which, at one end, is provided with stiff springs N, and connected with said springs by means of the rods or bars *b'*. The other end of the lever is connected with the knees by means of a cord or chain, *p*, which passes around the sheave Q, and is attached to a pin on the knee C. The other knee is connected with the lever by means of the strap P, which is attached to the drum or pulley O on the shaft E at one end, and to a pin on the knee C' at the other end. As the knees are advanced, the cord or chain *p* draws the small end of the lever M backward, which compresses the springs N, and when the spring feed-pawls *e f* are released, these springs N will recede the knees.

The springs N may be made of cylinders filled with rubber, having compression-plates *c'*; or volute springs may be used in the same manner, without the cylinders, by passing the rods *b* through their centers. A greater or less action is given to the springs by placing the bars *b'* on the lever M farther apart or nearer together.

By making the head or plate *c'* to closely fit the cylinder, air may be used, instead of rubber, for receding the knees.

The log is gaged to cut the required thickness, when set up, by means of the lever V striking against the pins d^1 d^2. The pin d^2 is fitted in a slot, *e'*, (shown in Fig. 3,) and is provided with a set-screw so as to set it in any required position to give the requisite thickness of board when the lever V strikes against said pin. The pin d^1 is used to limit the number of teeth on the ratchet-wheel with which the pawls shall engage. It will be advisable to use a sliding pin for all intermediate holes. The dogs *r* are placed in the vertical portion of the knees, and are held in position by pins running in inclined slots or grooves, as shown in Fig. 2, or by links, as shown at *t*, Fig. 6. In either mode of hanging them, when elevated, the teeth are drawn within the knee, and, when depressed, are projected beyond so as to engage with the log. I also provide an additional tooth or catch, *v*, (shown in Fig. 6,) which is connected to the dog *r* by a link, *u*, so as to move in an opposite direction to the dog. The dogs are raised or lowered by an arm or lever, *s*, permanently attached to shaft running through the knee, which shaft at its outer end is provided with an arm or crank, *w*, which is connected to the lever *y* by means of a link or bar, *x*. When the lever *y* is raised the dogs are drawn in, and when they are depressed they are thrown out so as to engage with the log.

In order to protect the head-blocks and the front of the knees, I face them with steel or other suitable metal strips *f'*, which protect them and prevent them from getting out of true by use. These faces can be taken off and replaced when worn, thereby saving the expense of replacing the entire part.

For long carriages more than two knees are frequently employed, and in that event it will be necessary to add one or more duplicates of the lever M.

It will be observed that in the construction of the set-works here described, that either the hooks I, the lever S, or the lever Y can be used to stop the receding movement of the knees; and also the log can be set up by the lever V or the lever S when accuracy is not essential, so that the set-works can be used if either one of these parts becomes disabled.

Instead of connecting the cord *p* with the knee, it may be wound upon a drum located on the shaft E; or a pinion may be placed on

said shaft, and a rack on the end of the lever. In either case, when the lever is released, the revolving of the shaft E reverses the motion of the pinion connected with the rack beneath the knees, and recedes the knees.

I am aware that springs have been used heretofore for receding the knees, and I do not therefore claim, broadly, the employment of springs for that purpose.

What I claim as new is as follows:

1. The lever M, in combination with the springs N, rods *b'*, cord *p*, and knee C, substantially as and for the purpose specified.

2. The pawls *e f*, arms *i k*, and shaft E, in combination with links *j* and *l*, rock-shaft W, with projections *m* and *n*, substantially as and for the purpose set forth.

3. The lever S, pawl *e*, ratchet-wheel R, wheel X, and lever Y, in combination with knees C, blocks B, shaft E, pawls *f* and *c*, links *j l*, and rock-shaft W, substantially as and for the purpose herein specified.

NOAH SHAW.

Witnesses:

A. S. KEPLER,

J. H. CULBERTSON.