

J. P. McKINLEY.
Saw Mill Head Block.

Patented Aug. 17, 1880.



UNITED STATES PATENT OFFICE.

JOHN P. McKINLEY, OF BLACK HAWK, ASSIGNOR TO HIMSELF AND JOEL
L. C. PATE, OF CARROLL COUNTY, MISSISSIPPI.

SAW-MILL HEAD-BLOCK.

SPECIFICATION forming part of Letters Patent No. 231,341, dated August 17, 1880.

Application filed June 16, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. McKINLEY, of Black Hawk, in the county of Carroll and State of Mississippi, have invented a new and Improved Apparatus for Adjusting the Knees of Saw-Mill Head-Blocks, of which the following is a specification.

Figure 1 is a front elevation of the improvement. Fig. 2 is a side elevation, partly in section, through the line *x x*, Fig. 1. Fig. 3 is a sectional plan view taken through the line *y y*, Fig. 1. Fig. 4 is a sectional plan view taken through the line *z z*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish a mechanism by means of which the knees of saw-mill head-blocks can be adjusted by the driving power of the mill, and which shall be so constructed as to enable the sawyer to set the head-blocks very quickly and with great accuracy.

A represents the shaft that carries the saw and a pulley to receive the driving-belt. To the shaft A is attached a pulley or chain wheel, B, to receive a belt or chain, C, which also passes around a pulley or chain wheel, D, attached to the end of the shaft E. The shaft E revolves in bearings attached to the frame F, which is attached to the frame-work of the saw-mill. To the shaft E is keyed or otherwise secured a long gear-wheel, G, into the teeth of which mesh the teeth of the gear-wheel H.

The gear-wheel H is rigidly attached to the end of a hollow screw, I, and the gear-wheel H and hollow screw I revolve and slide upon a hollow shaft, J, one end of which is rigidly attached to the frame F. The shaft J is slotted longitudinally, and within its cavity is placed a spiral spring, K, one end of which is secured in the axis of crank-wheel P, and the other end is connected by a pin passing out through the slot in the said shaft, with a washer, L, placed upon the said shaft J, and held against the side of the gear-wheel H by the tension of the said spring K. The spring K thus holds the outer end of the screw I against the inner end of the hollow screw M,

which screw M receives and serves as a bearing for the outer end of the hollow shaft J. The screw M passes through and is supported by the stationary nut N, which is attached to the outer end of an arm or bracket, O, attached to the frame F.

To the outer end of the screw M is attached a crank or hand wheel, P, by means of which the said screw is turned.

Q is a pointer or index which rides in a ring-groove formed around the inner end of the screw M, and which passes through and slides in a longitudinal slot in the plate R, so that it cannot be turned by the screw M.

The index Q points to a scale of division-marks formed upon plate R, so that the position of the inner end of the screw M can be adjusted quickly and accurately. The teeth of the gear-wheel H also mesh into the teeth of the long gear-wheel S, which is made longer than the gear-wheel G, so that the gear-wheel H can slide out of gear with the gear-wheel G without getting out of gear with the gear-wheel S.

The gear-wheel S is keyed or otherwise secured to the shaft T, which revolves in bearings in the frame F, and has a beveled-gear wheel, U, attached to its outer end.

V W are two beveled-gear wheels attached to the ends of a sleeve, X, placed upon a shaft, Y, and connected with it by a tongue and groove, pin and slot, a spline, or other suitable means, so that the said gear-wheels will carry the said shaft with them in their revolution, and can slide longitudinally upon it to bring either of the said gear-wheels V W into gear with the gear-wheel U, according as the head-block knees are to be moved forward or backward.

The gear-wheels V W are adjusted to reverse the motion by a lever, Z, pivoted to the frame F, and the forked lower end of which rides in a groove in the sleeve X.

To one end of the shaft Y is keyed or otherwise attached a beveled-gear wheel, *a*, the teeth of which mesh into the teeth of a beveled-gear wheel, *b*, attached to the upper end of a vertical shaft, *c*. The shaft *c* revolves in bearings attached to the frame of the saw-mill, and to

its lower end is attached a beveled-gear wheel, *d*, the teeth of which mesh into the teeth of a beveled-gear wheel, *e*, attached to the end of the horizontal shaft *f*, placed below the carriage *m*, and revolving in bearings attached to the frame of the saw-mill floor. To the other end of the horizontal shaft *f* is attached a beveled-gear wheel, *g*, the teeth of which mesh into the teeth of a beveled-gear wheel, *h*, attached to the lower end of a short vertical shaft, *i*.

To the upper end of the shaft *i* is attached a beveled-gear wheel, *j*, the teeth of which mesh into the teeth of the beveled-gear wheel *k*, attached to the end of a short horizontal shaft, *l*. The shaft *l* revolves in bearings in brackets attached to the saw-mill floor, and to its other end is attached a gear-wheel, *n*, the teeth of which mesh into the teeth of the long-gear wheel *o*, which extends the entire length of the carriage *m*, or nearly so, and is keyed or otherwise secured to a shaft, *p*. The shaft *p* revolves in bearings in brackets *q*, attached to the said carriage *m*, and to the said shaft *p* are attached beveled-gear wheels *r*, the teeth of which mesh into the teeth of the beveled-gear wheels *s*, attached to the ends of the screws *t*. The screws *t* pass through the cavities of the hollow head-blocks *u*, and are swiveled to the said head-blocks. The screws *t* also pass through screw-holes in the lower ends of the knees *v*, so that the said knees can be adjusted by turning the said screws *t*.

The knees *v* rest and slide upon the tops of the head-blocks *u*, and their lower ends are made thin or are grooved to pass through slots in the tops of the said head-blocks *u*.

When the knees of the head-blocks are actuated by racks and pinions, pinions can be substituted for the bevel-gears on shaft *p*, to correspond with the racks in the head-blocks.

The belt *C* is put on slack and is tightened, when the log is to be adjusted, by pressing against the said belt a pulley, *w*, which is pivoted to the end of a bent or angle lever, *x'*. The short arm of the lever *x'* is pivoted to the bracket *O*, and the long arm of the said lever projects upward into such a position that it can be conveniently reached and operated by the sawyer.

To the upper part of the lever *x'* is pivoted, at its angle, a small angle-lever, *y'*, to the lower end of which is pivoted the upper end of a connecting-rod, *z'*. The lower end of the connecting-rod *z'* is pivoted to the outer end of a short lever, *1*, which is pivoted to the lower part of the upper arm of the lever *x'*, and to its inner end is pivoted the upper end of the connecting-rod *2'*.

To the lower end of the connecting-rod *2* is pivoted the outer end of the connecting-rod *3*, the inner end of which is pivoted to the latch-nut *4*.

The latch-nut *4* is pivoted to the bracket *O*, so that it may be swung up to engage with the threads of the screw *I*.

To the lever *1* is rigidly attached the upper end of a spring, *5*, which is curved downward, and its lower end is attached to the lower end of the connecting-rod *2'*, so as by its elasticity to bring the latch-nut *4* into the threads of screw *I*. Should nut *4* be raised while the machine is in motion and strike on a thread of the screw *I*, spring *5* will mesh the threads of the nut with those of screw *I* as soon as a space offers itself.

In using the machine the screw *M* is adjusted to bring the index *Q* to the division-mark of the scale upon the plate *R* indicating the thickness of the lumber to be sawed, so that the said screw *M* will serve as a stop to limit the movement of the gear-wheel *H* and screw *I* when forced outward by the spring *K*.

When the tightening-pulley *w* is thrown against the belt *C*, and the latch-nut *4* is thrown into gear with the screw *I*, the movement of the gear-wheel *G* will turn the gear-wheels *H* *S* to move the knees *v* forward, and at the same time the latch-nut *4* will cause the screw *I* and gear-wheel *H* to move inward until the gear-wheel *H* passes off the inner end of the gear-wheel *G*, and the movement of the gear-wheels *H* *S* and the gearing driven by them stops, leaving the knees *v* at exactly the desired point. By raising the tightening-pulley *w* against the belt *C* without throwing the latch-nut *4* into gear with the screw *I*, and adjusting the lever *Z*, the knees *v* may be moved forward or back continuously until their limit of movement is reached. This adjustment allows the knees to be quickly adjusted to receive a log.

If desired, the gear-wheels *G* *H* *S* and their attachments may be omitted, and a crank attached to the shaft *T*, so that the knees *v* can be adjusted by the sawyer from a distance by hand.

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

1. An apparatus for adjusting the knees of saw-mill head-blocks, constructed substantially as herein shown and described, consisting of the pulleys and belt *B D C*, the gear-wheels *G H S*, the screws *I M*, the tightening-pulley *w* and its lever *x*, the latch-nut *4* and its operating mechanism *1 2 3 5*, the shafts *T Y c f i l p* and their connecting-gearing, and the screws *t* or their equivalent, whereby the knees *v* can be adjusted from the saw-shaft, as set forth.

2. In an apparatus for adjusting the knees of saw-mill head-blocks, the combination, with the carriage *m*, the head-blocks *u*, the knees *v*, the screws and shafts *t p l i f c Y T* and their connecting-gearing, of the gear-wheels *G H S*, and the pulleys *D B* and band *C*, substantially as herein shown and described, whereby the head-block knees can be adjusted from the saw-shaft, as set forth.

3. In an apparatus for adjusting the knees of saw-mill head-blocks, the combination, with

the band C and the gear-wheels G H S, of the
screw I, the spiral spring K, the hollow shaft
J, the gage-screw M, having index Q R, the
tightening-pulley *w* and its lever *x'*, and the
5 latch-nut 4 and its operating-levers *y'* 1, bars
z' 2 3, and spring 5, or its equivalent, substan-
tially as herein shown and described, whereby

the adjusting mechanism can be thrown into 10
and out of gear, as set forth.

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Witnesses:

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