W. M. Ferry,

Head Block.

No. 113,866. Patented Apr. 18. 1871.

Fig. 1.

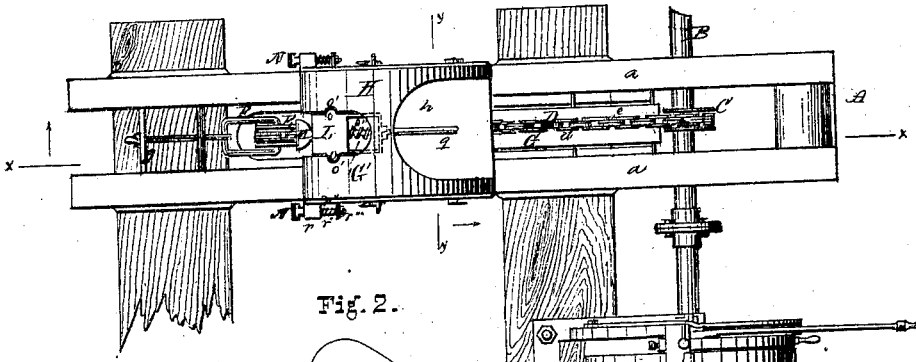

Fig. 2.

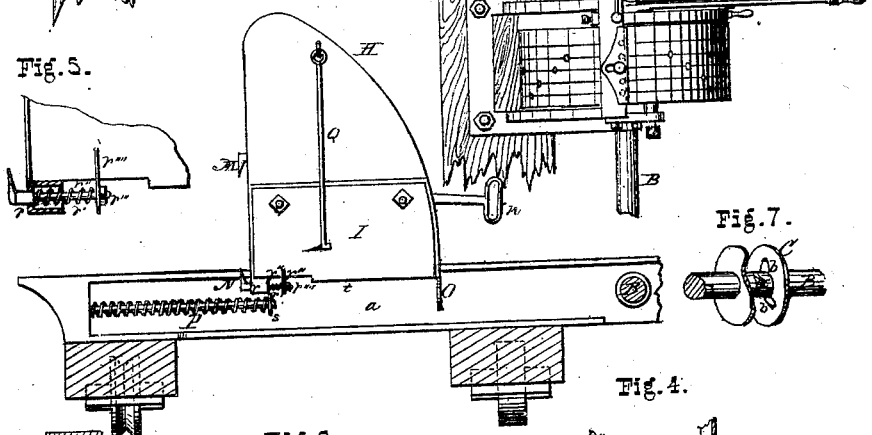

Fig. 5.

Fig. 7.

Fig. 4.

Fig. 3.

Fig. 8.

Fig. 6.

Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM M. FERRY, OF GRAND HAVEN, MICHIGAN.

IMPROVEMENT IN SAW-MILLS.

Specification forming part of Letters Patent No. **113,866**, dated April 18, 1871.

To all whom it may concern:

Be it known that I, WILLIAM M. FERRY, of Grand Haven, in the county of Ottowa, and in the State of Michigan, have invented certain new and useful Improvements in Saw-Mills; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a plan view of my device; Fig. 2, a side elevation of the same; Fig. 3, a vertical longitudinal section on the line *x x* of Fig. 1; Fig. 4, a vertical cross-section on the line *y y* of the same figure; Fig. 5, a vertical longitudinal section of the dogging-block shown in Fig. 3; Fig. 6, a vertical broken section, showing more particularly the side dog and its attachments, (represented in Fig. 2;) Fig. 7, a perspective of the sprocket-wheel, and Fig. 8 a similar view of the lock-bar tumbler.

Like letters of like kinds denote similar parts in each figure, and all the figures and their component parts are drawn upon a scale of one inch to one foot of the measurement intended for head-blocks of working size.

The object of my invention is the construction of head-blocks for saw-mills in which the driving-shaft may turn in only one direction to do the work designed, and thus avoid a complication of parts in which the motion of setting forward shall be produced by the impact of driving-links in a case-hardened chain, so as to avoid wear to any appreciable extent, and the withdrawal shall be by hand or automatically, so as to be more effective and simple; in which the chain shall be so operated by a sprocket-wheel as to avoid its slip, and kept from sagging, and tightened at will by convenient means; in which the standard shall be cast metal, traverse back and forth on trucks, be provided with a spring upper dog falling off and biting by its own gravity, and with spring side dogs in addition to the usual clamping-dogs, and with means for readily disconnecting said standards from the driving-chain and for withdrawing it to position to receive another log; and my invention consists in the novel construction, combination, and arrangement of the various operative parts intended to carry out the various objects before named, all as more fully hereinafter described.

In the drawing, A represents the bed of the head-block, composed of two side pieces, *a*, suitably connected together, arranged in parallel lines, both in vertical and horizontal planes, with broad flat upper surfaces. The driving-shaft B passes laterally through this bed near one of its ends, and turns freely in the side pieces. The sprocket-wheel C is secured upon this shaft between said side pieces, and is constructed with the usual side disks and connecting-barrel. Springing from these side disks and from the barrel, however, and cast or constructed with said disks and barrel, are pairs of lugs *b*, which are wedge-shaped both longitudinally and vertically, presenting the sharp end outwardly and the sharp edge upwardly, and arranged opposite to each other. These lugs enter between the ends of the outer links of the chain at each revolution of the sprocket-wheel, and wedge themselves tightly in both directions, so that they keep said chain in the center of the wheel and hold it without slip at its instant of greatest strain.

Upon the barrel of the same wheel, and in the center thereof, are other lugs, *c*, wedge-shaped, with the edge uppermost, which, in the rotation of the wheel, wedge themselves between the ends of the inner links of the chain. These lugs are, respectively, so arranged upon the wheel as to correspond in distance asunder with the precise distance of the centers of the spaces between the ends of the outer and inner links, respectively, of the chain, and retain their hold upon said chain during one-half of each revolution of the wheel.

The endless chain D, which is operated by the sprocket-wheel, is composed of outer links, *d*, and inner links, *e*, and driving-links *f*, which are outer links, all of these being constructed, respectively, alike and arranged in pairs. The links *d* and *e* have a well-known form and arrangement, as represented in the drawing, while the driving-links have a vertical front edge, *f'*, rising considerably above the general level of the chain, but conforming on their bottoms precisely to the shape and position of the other links. All of the links named are of precisely the same length, and the driving-links are placed on the chain at exactly equal

distances apart. The opposite bight of this chain rotates a wheel, E, similar to that before described, except that it has no lugs, which wheel turns upon and in a yoke, F, a connecting-rod from which passes through a plate, *g*, between the side pieces *a*, where it is threaded and furnished with a nut, by means of which the wheel E is drawn back and the chain D tightened, as described.

Between the wheels C and E, and extending the whole distance, but not filling the space between the side pieces *a*, is a plate, G, resting upon suitable supports extending between said side pieces, upon which plate the chain is supported and kept upon a level in its forward passage over the wheels.

The standard H, which traverses upon the bed A back and forth, is a casting of the form represented in the drawing, having a width equal to that of the bed, an opening, *g'*, in the front and top for the operation of the upper dog, an internal cavity, *h*, provided with a floor, *h'*, which cavity opens to the rear, so as to avoid unnecessary weight and to give room for raising said dog. Below the floor *h'* the outsides of the standard are cut away, and the portions thus cut away are covered by removable plates I, which are attached to the main body of the standard by suitable means, and inclose that portion of the standard below said floor. Partitions *i* extend longitudinally across the under side of the floor *h'*, dividing it into three nearly equal parts, lettered *j* for the central cavity, and *j'* for the outer ones. In these outer cavities, *j'*, the trucks J, of which there are two pairs, turn freely upon spindle *k*, held in recesses in the partitions *i*.

These trucks are so constructed and arranged that one pair is near the front and the other near the back of the standard, that each truck nearly fills the cavity laterally in which it is placed, and they all support the standard at a point where its front and rear sides will nearly touch the side pieces of the bed, so as to prevent the intrusion of sawdust under said standard, and to sweep off any accumulation of sawdust upon said side pieces, which sawdust, if it falls between said side pieces, will escape on either side of the plate G.

The object of the trucks above mentioned is to enable the standard to move easily backward and forward upon the bed.

The lock-bar K operates in the central part of the cavity *j*, passing through a sleeve, *m*, secured upon the upper wall of said cavity, and provided with a stop, *m'*, near its inner end, with an anvil, *l''*, near its center, with a shoulder, *l'*, near its outer end, and with a handle, *n*, projecting through a slot in the casing of the standard. A tumbler, *l*, is pivoted upon hangers, which embrace the lock-bar, the upper part of the tumbler, as shown in Fig. 8, being slotted, so as to permit the passage of the lock-bar.

In operation, the driving-links strike the lower face of the tumbler, which is prevented from revolving by the impact of its upper portion against the anvil, while the lock-bar itself is prevented from being forced out by the locking of the shoulder *l'* against the inner side of the casing of the standard. When the standard has performed its forward movement under the impact of the driving-chain the handle *n* is raised, which unlocks the lock-bar from the casing of the standard. The lock-bar is then drawn out, which partially revolves the tumbler, allowing it to be drawn back in the withdrawal of the standard over the vertical faces of the driving-links, and in this operation the stop *m'* prevents the further withdrawal of the lock-bar.

A dog-bar, L, provided upon its sides with projections *o*, slides up and down in the opening *g*, which in turn has corresponding grooves *o'* for the reception of said projections. To the rear of the dog-bar is attached a casing, *o''*, and from the front of the same bar, near its top, projects the spring-dog M, with biting-teeth projecting downward, with a square shank, *p*, where it moves freely in a similar opening in the dog-bar, and a round shank, *p'*, where it passes through the interior of the casing, in which the shank is provided with a spiral spring, *p''*. The end of the shank *p'* outside of the casing is furnished with a nut, *p'''*, by means of which the projections of the dog beyond the face of the standard may be regulated as well as restrained.

A handle, *q*, projecting through said casing into the cavity of the standard, furnishes means by which to raise the dog-bar, and its own gravity serves to fasten and retain it in the log.

The removable plates I, before mentioned, project below the tops of the side pieces *a*, and are furnished at their front corners with side spring-dogs N, biting upwardly, with square shanks *r* where they are embraced in hangers having similar openings, and round shanks *r'* where they are furnished with spiral springs *r''*, and with nuts *r'''*, resting against the outside of brackets *r''''*, for the purpose of regulating and restraining the forward movement of the dog. The object of having the dogs provided with springs is for more convenient management and for greater security, as is hereinafter more particularly explained.

The rear lower corners of the plate I are also provided with followers O, which, in the forward movement of the standards, embrace the cover-plate *s* of the side spring P, and check said movement without violence, and withholding-flanges *t*, which pass under the sides of the top of the bed and serve to hold the standard on said bed.

Side dogs Q are pivoted to the outsides of the standard, near the top thereof, and are employed in the usual manner.

In the operation of my device, when the head-block is in position and a log is rolled upon the carriage, it may be secured in place by the dogs Q, the log, if touching the side spring-dogs at all, only serving to press them

back out of the way. In this position, a slab being taken from the log, it may be turned over so as to bring the sawed side against the face of the standard. In the process of turning the revolution of the log will force the upper spring-dog inwardly and out of the way. In its further turning the lower edge of the sawed portion of the log will fall upon the side spring-dogs, which will hold it in place firmly against the face of the standard. The dog-bar is then raised by hand and suffered to fall, which completes the secure holding of the whole log closely against the standard.

In the sawing the log is fed up by means of the driving-shaft, operated preferably by some feed device, of which a specimen is shown in Fig. 1 of the drawing, and which forms the subject-matter of a separate application for Letters Patent. The shaft, by means of the sprocket-wheel, carries the chain, the driving-links of which, by impact against the anvil on the lock-bar, impel the standard the desired distance forward. When the whole distance is completed, the standard, rolling easily on its trucks, is readily withdrawn by hand.

In the construction of my device it is important to make the parts upon which the wear principally comes very hard, or to employ steel for that purpose, and it will be found that thus constructed the wear will be almost imperceptible, and this wear, moreover, being in result distributed equally over a number of boards, will be imperceptible, almost, in any single one.

It is also important, in connection with a setting device, as mentioned, to make the distance between the driving-links precisely equal to the circumference of the sprocket-wheel on its pivot-line. These head-blocks may be constructed so as to be used independently, or connected together by suitable means, so as to act simultaneously.

As some portions of my device may be applicable to purposes other than for sawing lumber, I do not wish to confine such parts, or even the whole device, to such purposes, but desire to use the same or any of its component parts in whatever connection and for whatever object the same may be applicable.

Having thus described my invention, what I claim as new therein is—

1. The chain D, provided with the driving-links *f*, constructed and arranged substantially as described and shown.

2. In connection with a chain, D, the sprocket-wheel C, provided with lugs *b c*, and constructed substantially as described and shown.

3. In combination with the endless chain D, the sprocket-wheel C, the supporting-wheel E, and the plate G, constructed and arranged substantially as described and shown.

4. The springs *p''* *r'''*, in connection with saw-mill dogs M and N, substantially as described and shown.

5. The dog-bar L, provided with projections *n*, operating by its own weight in the groove *o* upon the standard H, and carrying the spring-dog M, the several parts being constructed and arranged substantially as described and shown.

6. The combination of the lock-bar K and tumbler *l*, the trucks J, and the bed A, all constructed and arranged substantially as described and shown, for the purpose of withdrawing the standard.

7. The lock-bar K and tumbler *l*, constructed and arranged substantially as described and shown, in combination with the chain D, for the purposes set forth.

8. The combination of the sprocket-wheel C, the supporting-wheel E, the endless chain D, and the driving-shaft B, so that the standard shall be operated while said shaft shall rotate continually in one direction.

9. The standard H, provided with the dog-bar L, the plates I, and the lock-bar K, and the tumbler *l*, all constructed substantially as described and shown.

10. The combination of the standard H, with its connected mechanism, with the bed A and its connected mechanism, all constructed and arranged substantially as described and shown.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of February, 1871.

WILLIAM M. FERRY.

Witnesses:
HENRY G. BIGELOW,
C. C. CASE.