2 Sheets--Sheet 1.

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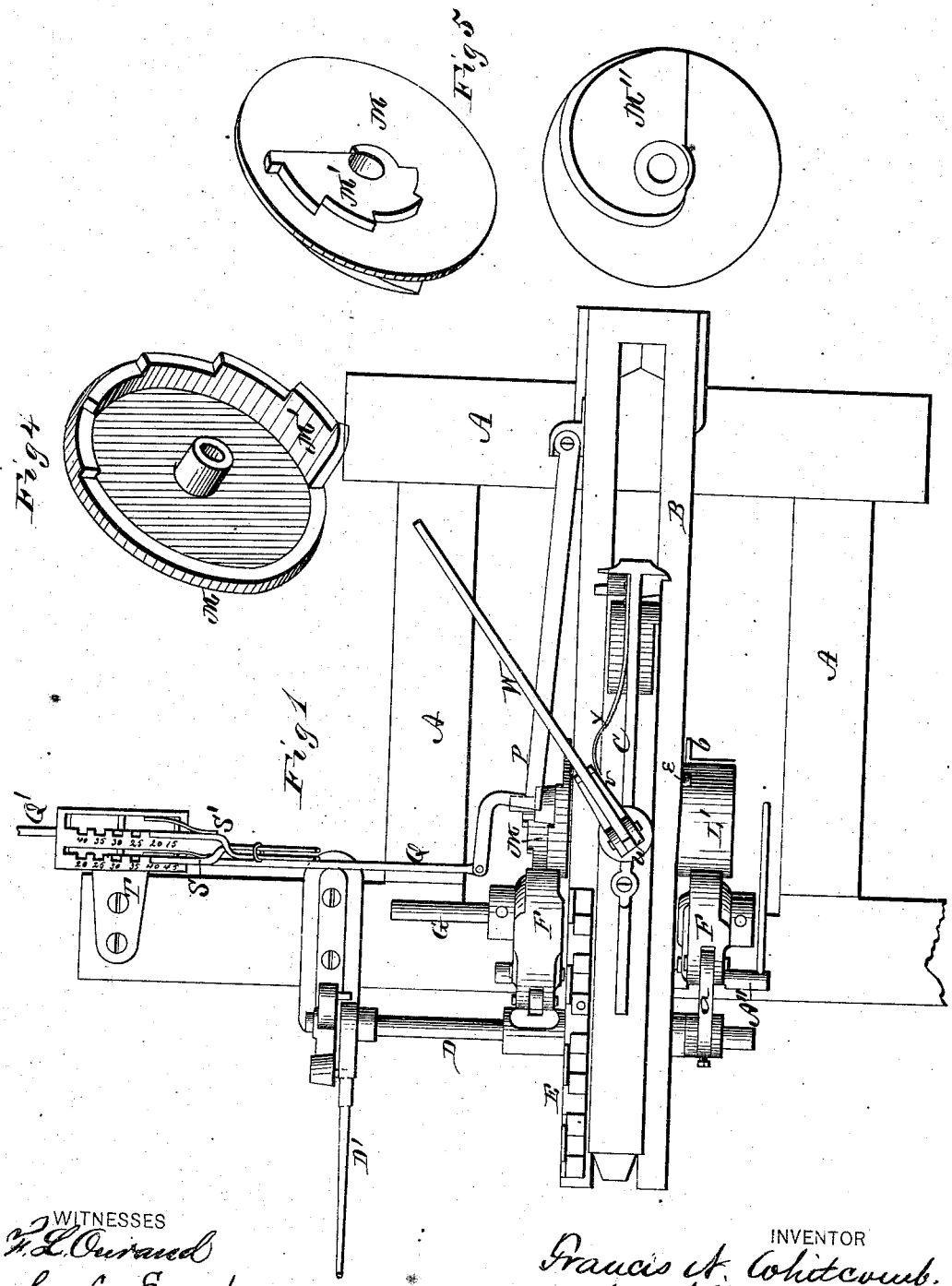
Head-Block for Saw-Mills.

No. 160,982. Patented March 16, 1875.



WITNESSES

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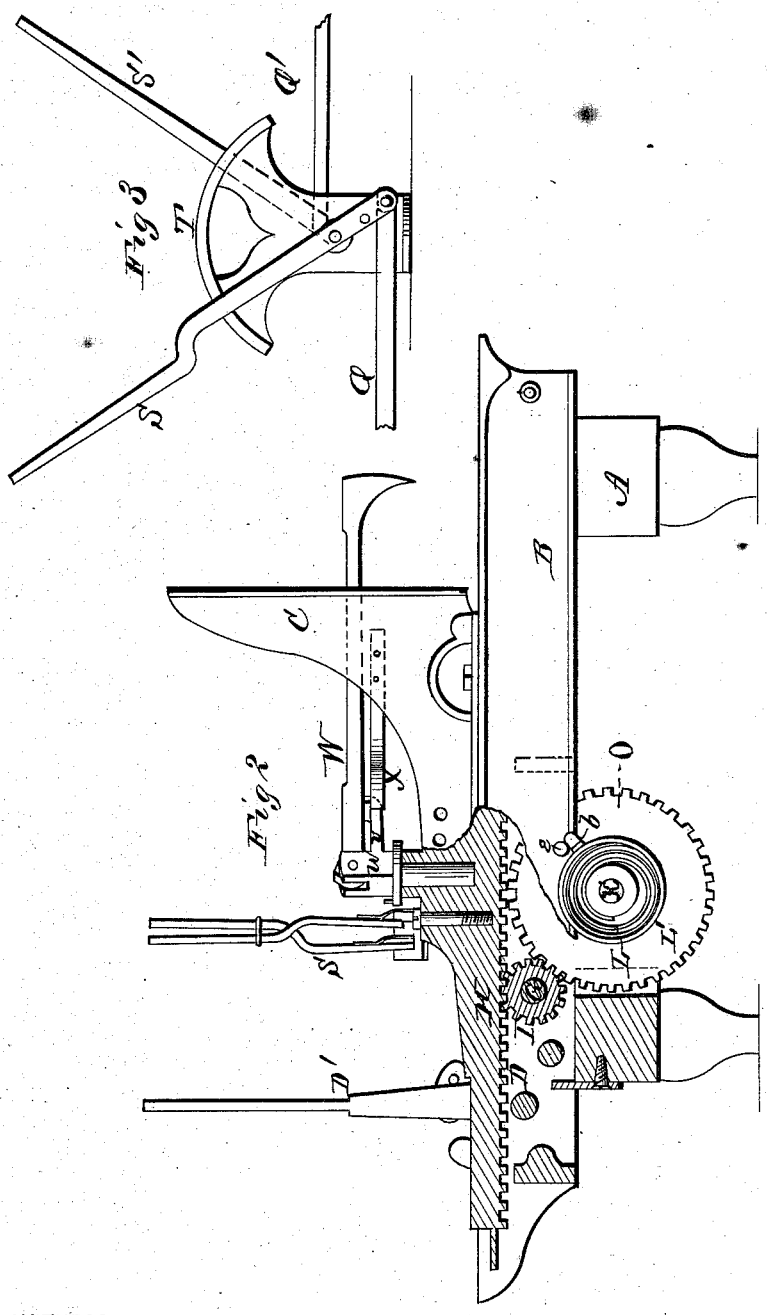

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UNITED STATES PATENT OFFICE.

FRANCIS N. WHITCOMB, OF AMITY, NEW YORK.

IMPROVEMENT IN HEAD-BLOCKS FOR SAW-MILLS.

Specification forming part of Letters Patent No. **160,982**, dated March 16, 1875; application filed December 14, 1874.

CASE A.

To all whom it may concern:

Be it known that I, FRANCIS N. WHITCOMB, of Amity, in the county of Orange and in the State of New York, have invented certain new and useful Improvements in Head-Blocks for Saw-Mills; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to improvements in head-blocks; and it consists, first, in combining, with a head-block knee having a rack-bar on its under side, of a gear-wheel mounted on a counter-shaft, and an inclosed coiled steel spring upon the same shaft for retracting the head-block knee after the same has been brought forward; second, in the employment of a stud upon the coiled-spring casing, which acts in conjunction with a stationary stud on the head-block, upon which the log rests for the purpose of winding the spring which recedes the knee; third, in the employment of a stepped-faced cam arranged on the counter-shaft, in combination with an angular lever, connecting-rod, and hand-lever, for the purpose of adjusting the distance of the retraction of the knee; fourth, in a dog, which is pivoted upon a detachable vertical shaft, having a projecting arm, in combination with a spring on the knee which bears against the projecting arm, for the purpose of throwing the dog rearward out of position when the dog is taken from the log, for the purpose of preventing injury to the saw; fifth, in the combination of a graduated scale adjacent to the hand-lever and the notched or stepped cam on the counter-shaft, which stops the knee as it recedes at any given point.

To enable others skilled in the art to construct my invention, I will proceed to describe the same more fully in detail, referring to the annexed drawings, in which—

Figure 1 represents a plan view. Fig. 2 represents a side elevation with the lines broken to show the rack-bar on the knee, the gear-wheel, pinion, and retracting coil-spring. Fig. 3 represents the graduated arc and two levers connected thereto, as well as their connecting-rods for the angular levers, which take into the notches in the stepped cams. Fig. 4 is a perspective view of one form of the stepped cam. Fig. 5 is a view of the two faces of another form of the stepped cam which may be employed.

In the accompanying drawings, A represents the usual form of saw-mill carriage upon which is placed two or more head blocks and knees. B represents the head-block, and C represents the knee, which is provided on its horizontal under portion with a rack-bar, H. This knee and its rack-bar move back and forth through a slot in the head-block. Extending crosswise through the block B at the rear is a shaft, D, which projects beyond the head-block, and is journaled at one end to a casting connected to the carriage, and provided at said journal with a hand-lever, D′. At each side of the head-block, and surrounding the shaft D, are sleeves, which are, by connecting-links, attached to shells or castings which contain pawls, which take into ratchets on a shaft, G, which also extends through the head-block and in front of the shaft D. This shaft G has also a pinion, I, which takes into the rack H on the under part of the knee. In front of the shaft G, and secured to the under part of the head-block by suitable adjustable boxes, is a large gear-wheel, O, which gears into the pinion I on the shaft G. On one end of this shaft is secured a coiled steel spring, L, inclosed in a circular box, L′. On the other end of this shaft is a disk, M, having a step-shaped flange, M′, which extends at right angles outwardly from its face. The casing L′ of the spring has an arm, *b*, upon its periphery, and the side of the head-block has a stud, *e*, so that, as the knee C is fed forward, the arm on the casing will strike against the stud, and as the knee is fed farther forward the spring in the casing will be wound up, as more fully hereinafter set forth. P represents a lever, which is pivoted to the front part of one side of the head-block, and extends parallel therewith near to the stepped-shaped cam M, where it is provided with an L-shaped bend, as shown in Fig. 1. The rear end of this lever is attached to a horizontal connecting-rod, Q, extending at right angles, and which rod is piv-

oted to the lower end of a vertical hand-lever, S, secured to a casting on the carriage. The top portion of this casting T is made on a curve, and notched for the lever to be caught in any one of the notches desired. Near each of these notches is affixed a number to indicate, through the medium of the cam M, the distance of the knee C is in or out on the head-block, as hereinafter described. E represents a scale of notches to designate the number of boards or plank in the cant. A″ represents a short shaft having a cam to engage and disengage the pawls in the shells F. W represents the dog which holds the log. This dog is pivoted to a stem, *w*, having one arm, *v*, and is fitted into a socket made therefor in the knee. Secured to the knee is a spring, *x*, of any suitable form or construction, which is adjacent to the arm *v* on the stem to which the dog is pivoted, so that as soon as the dog is released from the log, the spring will throw the dog around out of the way of the saw. A stud should be placed on the top of the stem to prevent too violent a throw of the dog, and its being thrown too far rearward.

In Fig. 5 the form of the stepped cam is slightly changed from that shown in Figs. 1 and 4. In the form seen in Fig. 5 the notches M′ are on the face of the disk. The reverse of the plate would have a counter-balance, as seen at M″, to cause it to rotate in proper position.

In the use of the form seen in Fig. 5 it would be necessary to place the lever P at right angles or turned upward from its present position, so that its angle would act upon the notches, and a crank would then be necessary to raise upward the bend of the lever from the notches in the cam. It will be understood that it is customary to employ two or more head-blocks (in sawing lumber) at one time; hence it is beneficial to use two levers, S S′, one operating upon one head-block and the other upon the other head-block. To this end I employ two levers within the arc T, so that one lever may operate to set back the knee at any number of inches required, and the other remain stationary, or be operated to remove a knee back a greater or less distance; and they may both be operated to throw the two knees back the same distance. In other words, the knees, by means of these levers, may be adjusted independently or together, as desired. In operating the levers together the tops thereof are so bent that a ring may clasp them both for operating them at one movement.

The operation of my head-block is substantially as follows: The lever S is first set in a notch in the graduated arc T, according to the size in inches of the diameter of the log to be sawed. This movement of the lever draws the lever P out, so that it will set to a corresponding notch in the step-cam M, and after the knee is fed forward, will check or retard its backward movement at the point, according to the number of inches of the width of the log corresponding with the notches on the arc and those on the cam. As the lever D′ is operated, the pawls and ratchets rotate the shaft G, and the pinion I moves the knee forward by taking into the rack H; the pinion I also backwardly revolving the shaft K through the medium of the gear-wheel O when the pawls are released. In the forward movement of the knee the gear-wheel O carries with it the casing L′ and spring L, as well as the cam M, until the casing revolves far enough for the arm *b* to strike against the stud *e*. The casing then stops and the shaft K with its sleeve to which the spring is attached, continues to revolve, and as it does the spring L is coiled around tightly. Then as soon as the lever A″ is thrown back the dogs are released from the ratchets and the recoil of the spring will throw the knee back until the cam M revolves, so that the lever P will catch against the notch set for it to strike, and there be held.

I do not confine myself to any particular position of placing the cam M, spring L, and casing and gear-wheel O, as they may be placed in any suitable operating positions with respect to the knee and the feeding mechanism therefor; nor do I wish to be understood as confining myself to the use of said elements with any particular form of knee or head-block.

It will be seen that with my invention there is nothing to retard the forward movement of the knee until after the casing L′ has been rotated, so that the arm *b* strikes the stud *e*, hence the operation of the knee is easy and free until the spring begins to wind, and the knee is at a point where the log has been greatly reduced, and no great exertion is required to then force forward the knee.

In all head-blocks known to me where a spring has been used to retract the knee, the operator, in forwarding the knee to the saw, must exert great pressure, inasmuch as the spring begins to coil at once, and the log at that time being large the power required to force forward the knee must of a necessity be very great. With my invention I obviate coiling the spring until the log is lightened, hence I require but little power to forward the knee.

My spring is completely inclosed in the casing L′, so that sawdust, dirt, &c., cannot get between the coils of the spring to affect the operation of the same.

I am aware that a head-block knee has been retracted by a spring after the same has been fed forward to the log; hence I do not broadly claim such as my invention.

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

1. The combination, with the knee C, rack-bar H, and pinion I, of the counter-shaft K, gear-wheel O, and coiled spring L inclosed within the casing L′, substantially as and for the purposes herein set forth.

2. The combination of the arm *b* on the spring-casing L′ with the stud *e* on the head-block, as and for the purposes set forth.

3. The combination of the cam M having notches on its face with the angular lever P and the retracting-knee C, substantially as and for the purposes herein set forth.

4. The combination of the removable stem *w*, having a projecting arm, V, the dog W pivoted to the stem and the spring *x* attached to the knee and bearing against the arm V, all constructed substantially as set forth.

5. The combination of a graduated scale, T, with the hand-lever S, connecting-rod O, angular lever P, and stepped cam M, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of December, 1874.

F. N. WHITCOMB.

Witnesses:
J. M. MASON,
H. A. HALL.