(No Model.) 2 Sheets—Sheet 1.

E. J. MULLER & A. CUNNINGHAM.

HEAD BLOCK FOR SAWMILL CARRIAGES.

No. 551,871. Patented Dec. 24, 1895.

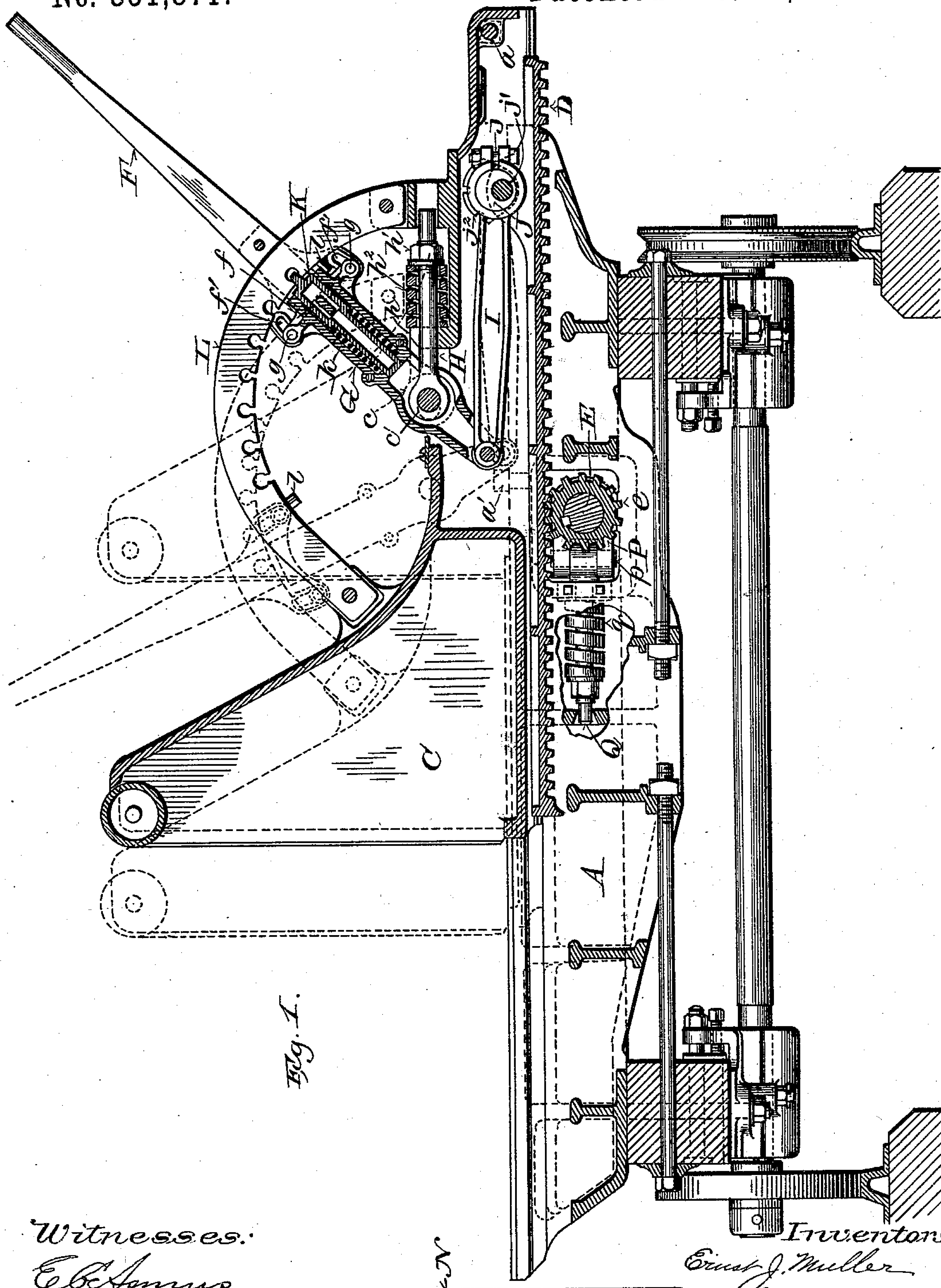

Fig. I.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

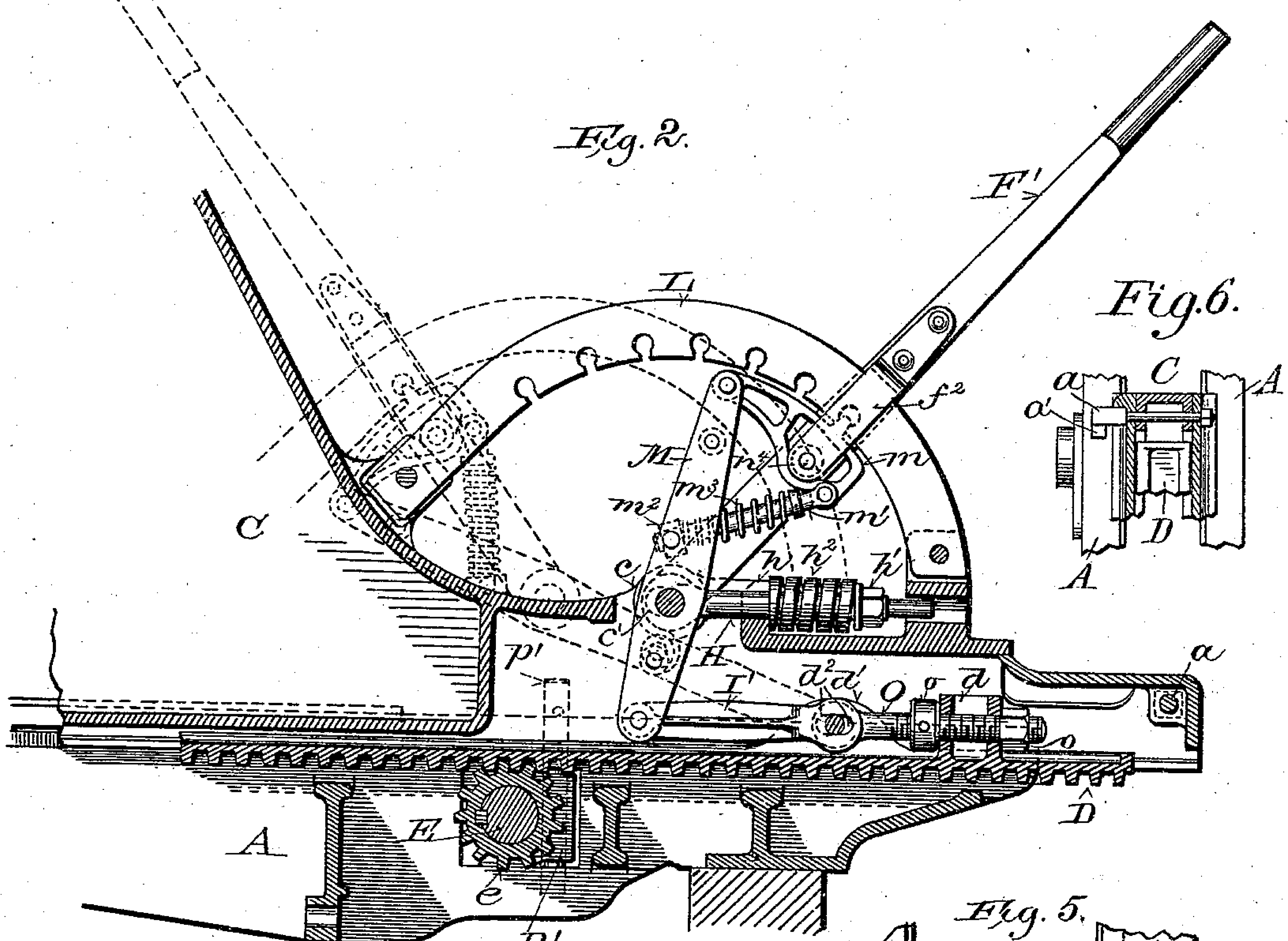


Fig. 6.

Fig. 3.

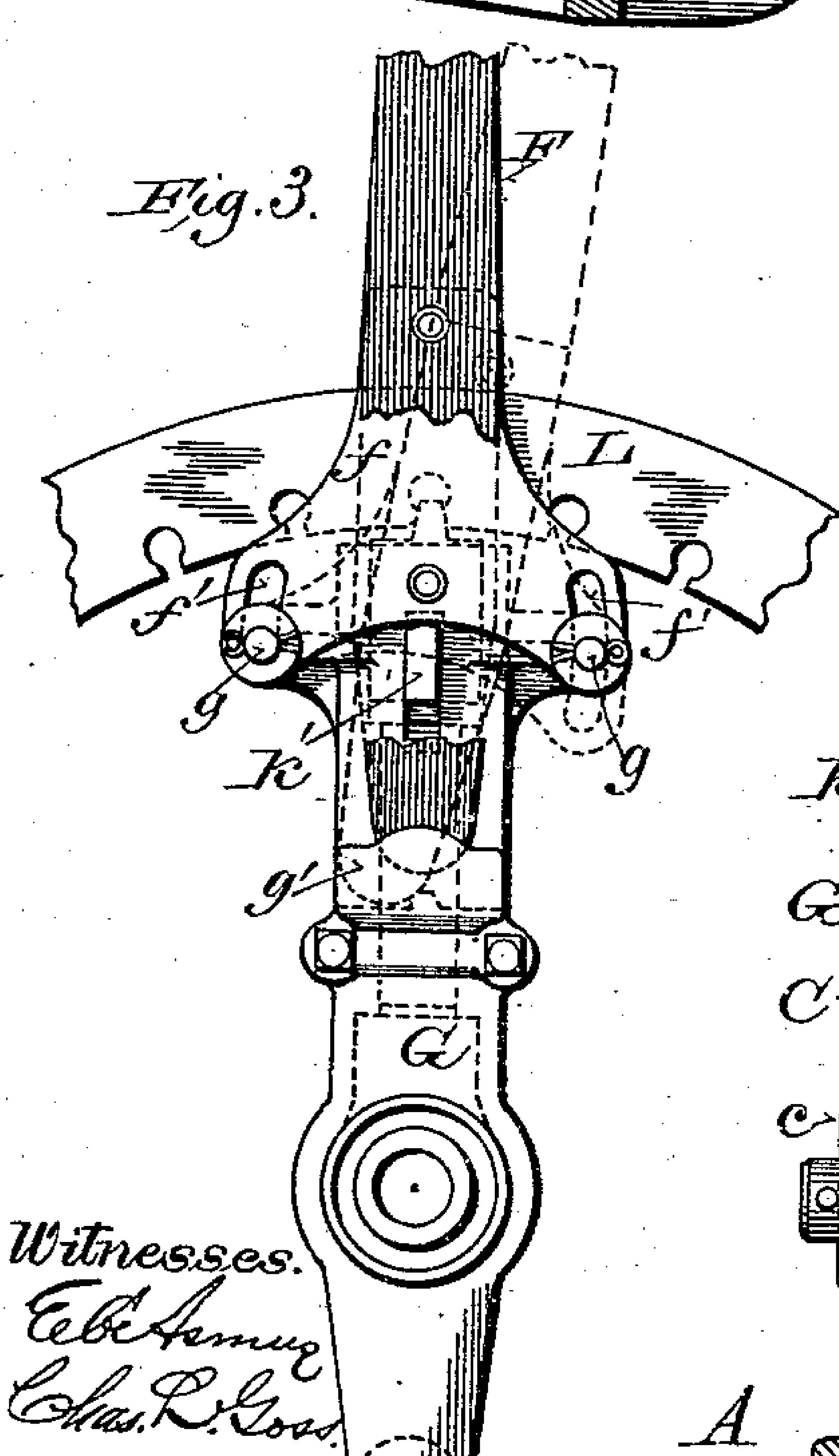


Fig. 4.

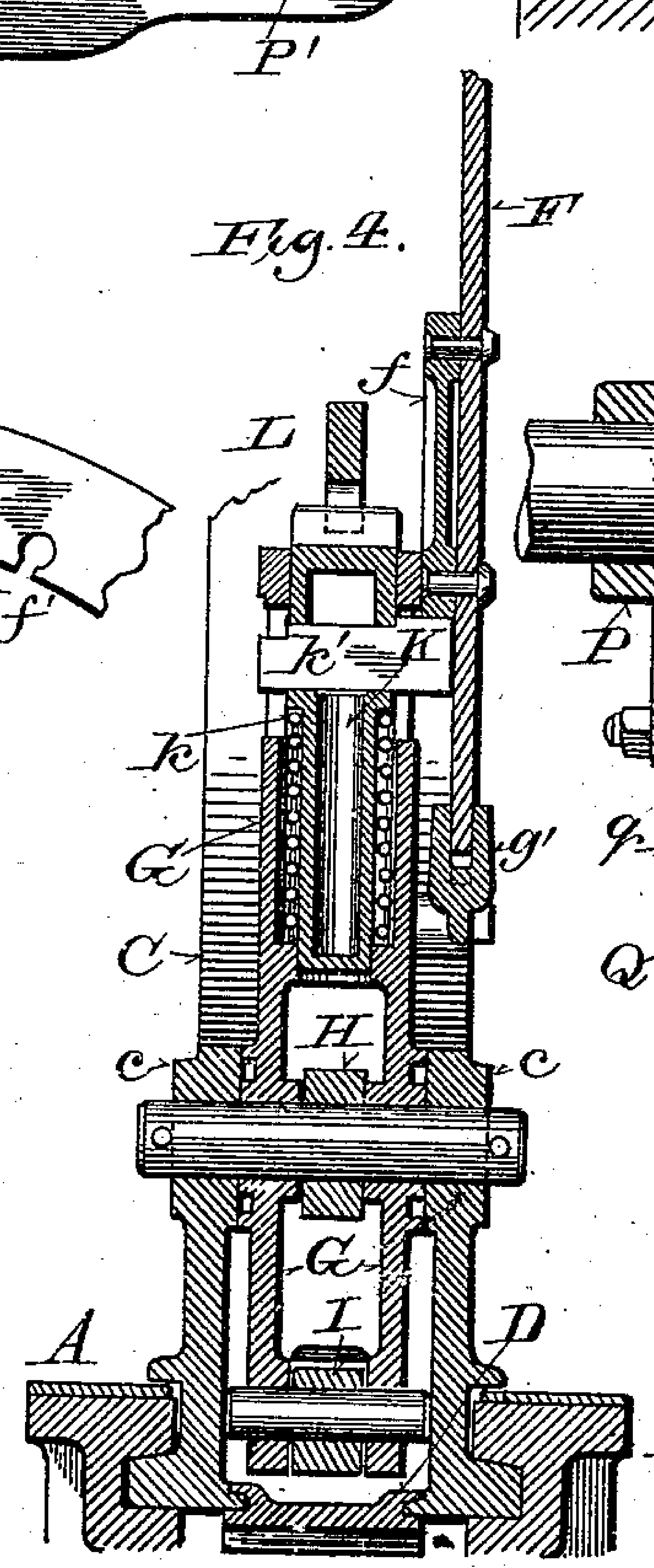
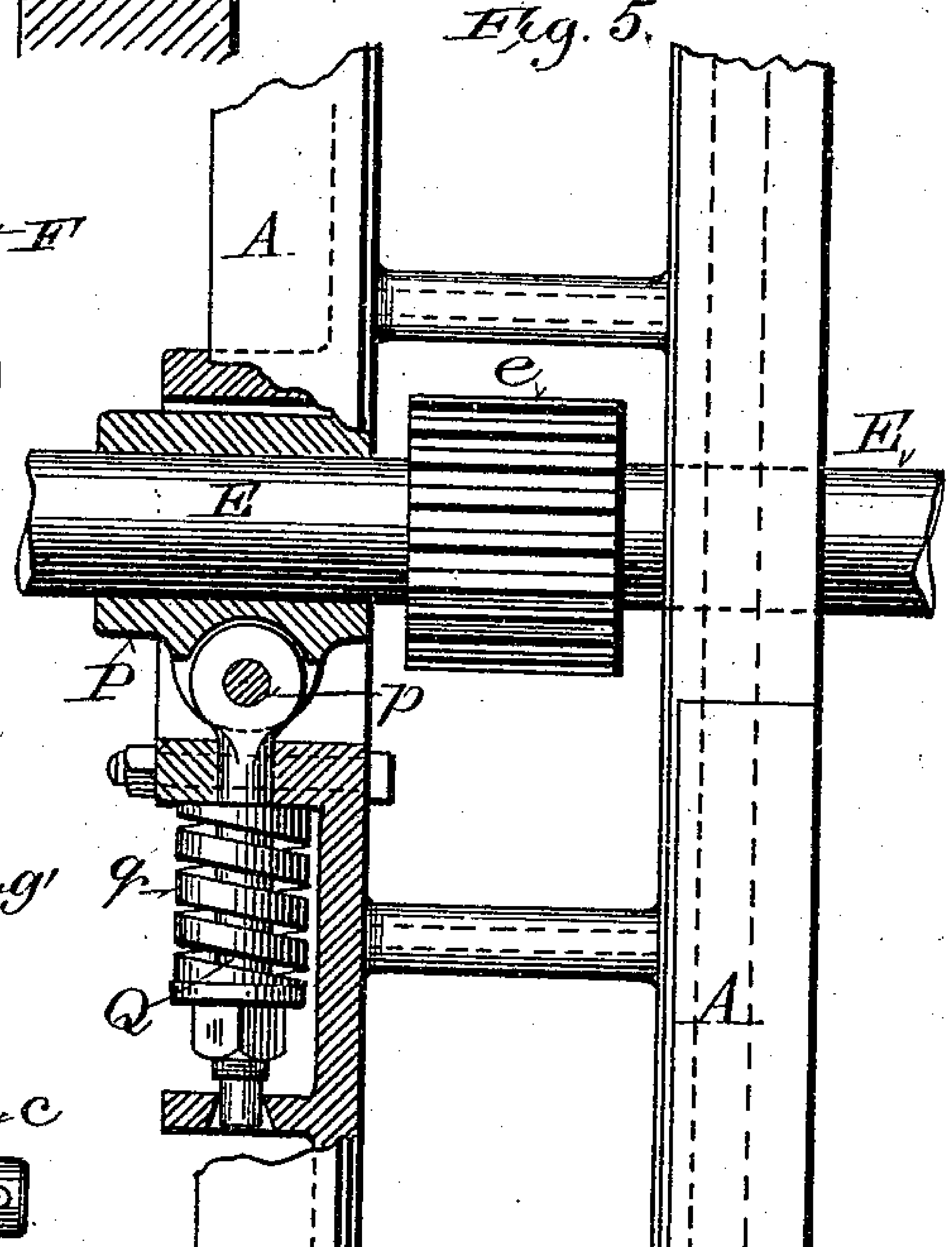


Fig. 5.



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UNITED STATES PATENT OFFICE.

ERNST J. MULLER, OF FORT WAYNE, INDIANA, AND ALBERT CUNNINGHAM, OF MILWAUKEE, WISCONSIN; SAID CUNNINGHAM ASSIGNOR TO SAID MULLER.

HEAD-BLOCK FOR SAWMILL-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 551,871, dated December 24, 1895.

Application filed June 9, 1892. Serial No. 436,051. (No model.)

To all whom it may concern:

Be it known that we, ERNST J. MULLER, of Fort Wayne, in the county of Allen and State of Indiana, and ALBERT CUNNINGHAM, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Head-Blocks for Sawmill-Carriages; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main objects of our invention are to relieve the operating connections of the knees from the shock and strain of heavy logs or timber thrown or moved forcibly against them, to facilitate placing the set-shaft bearings and pinions and to prevent the binding of the set-shaft in its bearings, to provide for the exact alignment of the knees with each other and to facilitate their adjustment to lines more or less oblique to the saw-line for the purpose of sawing taper stuff.

It consists of certain novel features in the construction and arrangement of the taper mechanism and of the set-shaft bearings hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a vertical longitudinal section of a head-block and its attachments, to which our improvements are applied. Fig. 2 is a similar view of a portion of a head-block and knee, showing modifications of the taper-movement and set-shaft bearing illustrated in Fig. 1. Figs. 3 and 4 are detail views, on an enlarged scale, of a portion of the taper lever and its connections, Fig. 3 being a side elevation, and Fig. 4 a longitudinal section in a plane at right angles to the plane of movement of said lever. Fig. 5 is a horizontal sectional view, on an enlarged scale, of the set-shaft bearing and its connections shown in Fig. 1; and Fig. 6 is a plan view of a portion of a head-block and horizontal section of a portion of the associated knee, showing the stop for limiting the advance of the knee.

Referring to Fig. 1, A is a head-block and C a knee having the usual tongue-and-groove connections therewith at its base, whereby it is adapted to be moved horizontally toward and from the saw-line indicated at N, which represents a portion of the saw. The knee is provided in its base with a sliding rack D, having tongue-and-groove connections therewith, as clearly shown in Fig. 4.

E is the set-shaft, having keyed thereon a pinion *e*, which engages with the rack D.

F G represents the taper-lever pivotally and yieldingly connected with the base of the knee C by an eyebolt H, which is supported horizontally and movable endwise in a notched lug or ear *h* on the base of the knee. Between said ear *h* and a nut and washer *h'* a spring h^2 is placed upon said eyebolt, so as to permit the knee to yield against the tension of the spring to a blow or excessive strain upon the working face of the knee which would be liable to break or injure its connections. At its lower end said lever is connected by a link I with rack D. The end of the link connected with said rack is formed with a split collar, which is clamped by a bolt *j* upon an eccentric J, through which the pivot-pin *j'* passes. This eccentric is formed with a notched flange j^2, or provided with other suitable means for turning it in the link when the nut on the clamping-bolt *j* is loosened. By this means the knee may be moved longitudinally upon its rack D so as to bring it into exact alignment with the other knee or knees of the carriage.

The taper-lever consists of two parts, the arm or handle F and the stub G. The stub G is bored axially to receive a cylindrical latch K, which projects at its outer end to engage with notches formed in the inner edge of the quadrant L, attached at the ends to the base of the knee. A spiral spring *k*, inserted in an annular recess provided for it around latch K within the lever-stub, forces and holds said latch normally outward in engagement with the quadrant L. The taper-lever

and latch are constructed and arranged so that the initial movement of the handle F in either direction will operate first to disengage the latch from the quadrant, and then to shift the knee in either direction, as desired, the handle automatically assuming its central or normal position with reference to the stub when released, and the latch engaging with the quadrant. For this purpose the handle F is provided, adjacent to the outer end of the lever-stub G, with a trip or cam plate f, which is formed on each side of the longitudinal center of the lever and equidistant therefrom, with arc-shaped slots f' f', in which are inserted and loosely held pins g g, projecting from the lever-stub G. The lower edge of the trip-plate f is curved upwardly between the slots f', as clearly shown in Fig. 3, and is arranged to engage with the end of a cross-bar k', secured in latch K and loosely projecting through a slot in the lever-stub, which incloses and constitutes a housing for said latch. At its lower end the handle F is held in a keeper g', formed with or attached to the lever-stub G, and constructed and arranged to permit the handle F to be turned upon either of the pins g to the extent of the opposite slot f', and at the same time to hold it firmly in its proper relation to the lever-stub. The lower edge of the trip-plate f is so shaped that when the handle F is turned upon either of the pins g, as a pivot, it will by its initial movement act upon the projecting cross-bar k' to force the latch K out of engagement with the quadrant L. When the lever is released, the spring k will force the latch outwardly into engagement with the quadrant and bring the handle F to its normal or central position with reference to the lever-stub.

The operation of the handle F upon the latch is illustrated by dotted lines in Fig. 3, and the operation of the taper-lever in advancing the knee is shown by dotted lines in Fig. 1. The dotted position at the right in Fig. 1 shows the limit of the receding movement of the knee.

Referring to Fig. 2, which illustrates a modification of the taper-lever and its connections, the handle F′ is pivoted to the eyebolt H, by which it is yieldingly connected with the base of the knee in the manner hereinbefore explained, and is provided with a keeper f^2, which passes on the opposite side of the quadrant L, thereby steadying and supporting said lever-handle in its proper relative position to said quadrant. M is the lever-stub pivoted concentrically with the handle F′ to the eyebolt H, and connected at its lower end by a link I′ with an eyebolt O, which is adjustably fastened in a perforated lug d on rack D by nuts o o. To the upper end of the lever-stub M is pivoted one end of a latch m, the opposite end of which has a yielding connection therewith through an eyebolt m' pivoted to said latch and passing loosely through a perforated block m^2 swiveled in said lever-stub. Upon this eyebolt between a shoulder thereon and said block m^2 is placed a spring m^3, which forces the latch outwardly and holds it normally in engagement with the inner notched edge of quadrant L. A friction-roller n^4, journaled on a pin secured in handle F′ and the keeper f^2, passes through an opening in the latch and bears against the inner curved or cam-shaped side of said opening, which is so constructed and arranged that when the handle F′ is turned in either direction its initial movement will carry the friction-roller n^4 out of the depression in which it normally rests in said latch, and thereby force said latch against the tension of spring m^3 out of engagement with the quadrant.

In both the constructions shown in Figs. 1 and 2 the ends of the pivot-pin in the eyebolt H project into and are guided by horizontal slots c' in ears c on the base of the knee, as indicated by dotted lines. The ends of the pivot-pin in eyebolt O (shown in Fig. 2) also project into and are guided by slots d^2 in ears d' formed on rack D, as indicated by dotted lines.

To facilitate placing and securing the pinions upon the set-shaft, and to prevent the binding of the set-shaft in its bearings in case the head-blocks are not accurately aligned or in case they get out of alignment, we provide a box P in the head-block for the set-shaft, with a pivotal connection with the head-block which allows said box to conform in position to said shaft without binding thereon. To further provide against injury to the set-works and connections by which the knee is operated and adjusted from a heavy strain or violent blow upon the working face of the knee, we also provide the box P with a yielding connection with the head-block. For this purpose the box is pivoted by a vertical pin p, passing through ears thereon to an eyebolt Q, supported horizontally and movable lengthwise in bearings provided therefor in the head-block, as shown in Figs. 1 and 5. A spring q, bearing in opposite directions against the head-block and the nut and washer on said eyebolt, permits the set-shaft to yield away from the saw-line.

For the sake of firmness and stability we prefer to provide the box P on its under side with a bearing-support in the opening formed therefor in the head-block, as shown in Fig. 1. This construction and arrangement of the set-shaft boxes not only prevents the set-shaft from binding, but also greatly facilitates assembling the set-shaft and its connections in the carriage, the pinions being placed and keyed thereon in the head-blocks before the boxes are secured in place, and the openings in the sides of the head-blocks provided for said boxes affording ample room for placing and keying said pinions on the set-shaft.

In Fig. 2, illustrating a modification of the set-shaft bearings, the box P′ is pivoted directly to the head-block, and the pivot-pin p' is made to project above the top of the head-block so as to serve as a stop for the knee,

which is provided at the end opposite the saw-line with a projection or bolt a, arranged to engage the upper projecting end of pin p' and limit the advance movement of the knee at the desired point.

In Fig. 6 a bolt or stud a', (indicated by dotted lines in Fig. 1,) secured in the top of the head-block, is shown to serve the purpose of the pivot-pin p' in Fig. 2.

It is obvious that various modifications in the details of construction and arrangement of the parts hereinbefore described may be made within the intended scope of our invention.

We claim—

1. In a saw mill carriage, the combination with a head block and a knee provided with a longitudinally adjustable rack, of a lever having a fulcrum connection with said rack and a horizontally yielding pivot connection with the knee, substantially as and for the purposes set forth.

2. In a saw mill carriage, the combination with a head block and a knee provided with a longitudinally adjustable rack, of a lever pivoted to a bolt or rod movable horizontally in the knee, a spring acting in opposite directions against said knee and said bolt or rod, and a fulcrum connection between said lever and rack, substantially as and for the purposes set forth.

3. In a saw mill carriage, the combination with a head block and a knee provided with a notched quadrant and with a rack longitudinally adjustable in its base, of a lever pivoted to said knee and provided with a spring latch adapted to engage with said quadrant and a link connecting said lever with said rack and provided in one end with an adjustable eccentric pivot connection, whereby said knee may be aligned horizontally with the other knee or knees of the carriage, substantially as and for the purposes set forth.

4. In a saw mill carriage, the combination with a head block and a knee provided with a notched quadrant and with a rack longitudinally adjustable in its base, of a lever pivoted to said knee and provided with a spring latch adapted to engage with said quadrant and to hold said lever in any desired position, a link connecting the lever with said rack and formed at one end with a split collar which is provided with a clamping bolt, and an eccentric through which the pivot pin passes, inserted and held in said collar, substantially as and for the purposes set forth.

5. In a saw mill carriage, the combination with a head block and a knee provided with a notched quadrant and with a longitudinally adjustable rack, a lever pivoted to said knee and provided with a spring latch adapted to engage with said quadrant and to hold said lever in any desired position, a link connecting said lever with said rack and formed at one end with a split collar which is provided with a clamping bolt, and an eccentric through which the pivot pin passes inserted and held in said collar and provided with a notched flange for turning it therein, substantially as and for the purposes set forth.

6. In a saw mill carriage, the combination with a head block and a knee provided with a longitudinally adjustable rack, of a lever having a yielding pivot connection with said knee and an adjustable link connection with said rack, substantially as and for the purposes set forth.

7. In a saw mill carriage, the combination with a head block provided with a notched quadrant and an adjustable rack, of a taper lever having pivot and fulcrum connections with said knee and rack and comprising an arm or stub formed with a longitudinal socket, a latch inserted in said socket and having a reduced cylindrical portion, and a spiral spring coiled around the reduced portion of said latch and bearing at one end against a shoulder thereon and at the other end against said arm or stub which incloses it, substantially as and for the purposes set forth.

8. In a saw mill carriage, the combination with a head block and knee provided with a quadrant and an adjustable rack, of a taper lever having pivot and fulcrum connections with said knee and rack and comprising a stub provided with a spring actuated latch adapted to engage with said quadrant and a handle provided with a trip plate formed on opposite sides of its longitudinal center with two arc-shaped slots through which pins on the lever stub are inserted and held and having its lower edge curved or cam-shaped to engage with a projection from said latch, substantially as and for the purposes set forth.

9. In a saw mill carriage, the combination with a head block provided with a knee having an adjustable rack and a quadrant of a taper lever having pivot and fulcrum connections with said knee and rack and consisting of a lever stub provided with a spring actuated latch movable longitudinally therein and operating outwardly and with two pivot pins on opposite sides of its longitudinal center and of a handle provided with arc-shaped slots in which said pins are loosely held and with a trip or cam plate adapted to engage a projection from said latch, substantially as and for the purposes set forth.

10. In a saw mill carriage, the combination with a head block provided with a knee having an adjustable rack and a quadrant notched on its inner edge, of a taper lever having pivot and fulcrum connections with said knee and rack and consisting of a stub provided with an outwardly working spring actuated latch adapted to engage with the inner edge of said quadrant, said stub being also provided on opposite sides of its longitudinal center with two pivot pins, and of a handle provided with arc-shaped slots in which said pins are loosely held and with a trip or cam adapted to engage with a projection from said latch, said lever stub being provided with a keeper for holding the end

of the lever handle in place relatively thereto, substantially as and for the purposes set forth.

11. In a saw mill carriage, the combination with a head block provided with a knee having a rack longitudinally adjustable in its base and a quadrant notched in its inner edge, of a taper lever consisting of a stub having a yielding pivot connection with said knee, an outwardly operating spring actuated latch, pivot pins on opposite sides of its longitudinal center, and a keeper below said pivot pins, and of a handle formed with arc-shaped slots in which said pivot pins are loosely held and with a trip or cam arranged to engage a projection from said latch, the lower end of said handle being held by said keeper in place relatively to said stub, and an adjustable link connection between the lever stub and said rack, substantially as and for the purposes set forth.

12. In a saw mill carriage, the combination with a head block and knee, provided with a rack, of the set shaft provided with a pinion working with said rack, and a box for said shaft pivotally connected with said head block, substantially as and for the purposes set forth.

13. In a saw mill carriage, the combination with a head block and knee provided with a rack, of the set shaft provided with a pinion working with said rack, and a box for said shaft yieldingly connected with said head block, substantially as and for the purposes set forth.

14. In a saw mill carriage, the combination with a head block and knee provided with a rack, of the set shaft provided with a pinion working with said rack, and a box for said shaft pivotally and yieldingly connected with said head block, substantially as and for the purposes set forth.

15. In a saw mill carriage, the combination with a head block and knee provided with a rack, of the set shaft provided with a pinion working with said rack, an eye-bolt supported horizontally and movable endwise in the head block, a spring having a bearing at the ends on said bolt and on the head block, and a box for the set shaft, pivotally connected with said eye-bolt, substantially as and for the purposes set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

ERNST J. MULLER.
ALBERT CUNNINGHAM.

Witnesses:
CHAS. L. GOSS,
E. C. ASMUS.