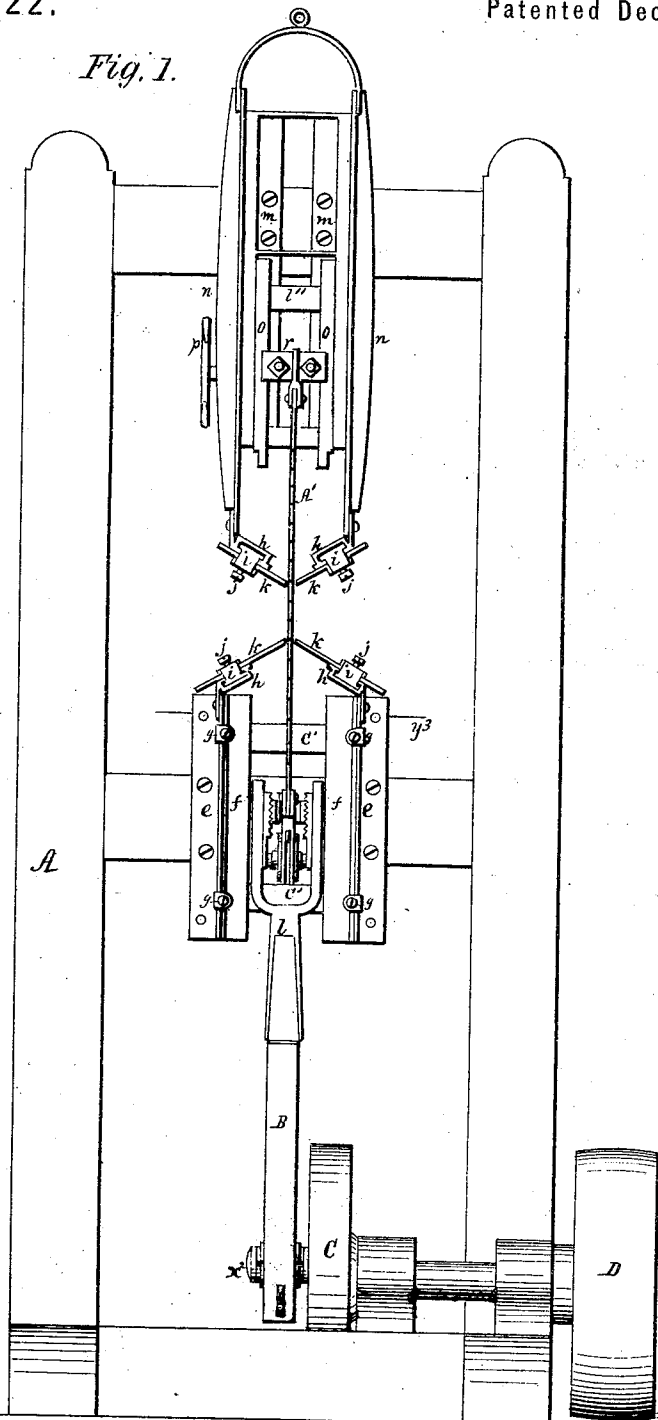


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Saw-Mills.

No. 133,922.

Patented Dec. 17, 1872.

Fig. 1.



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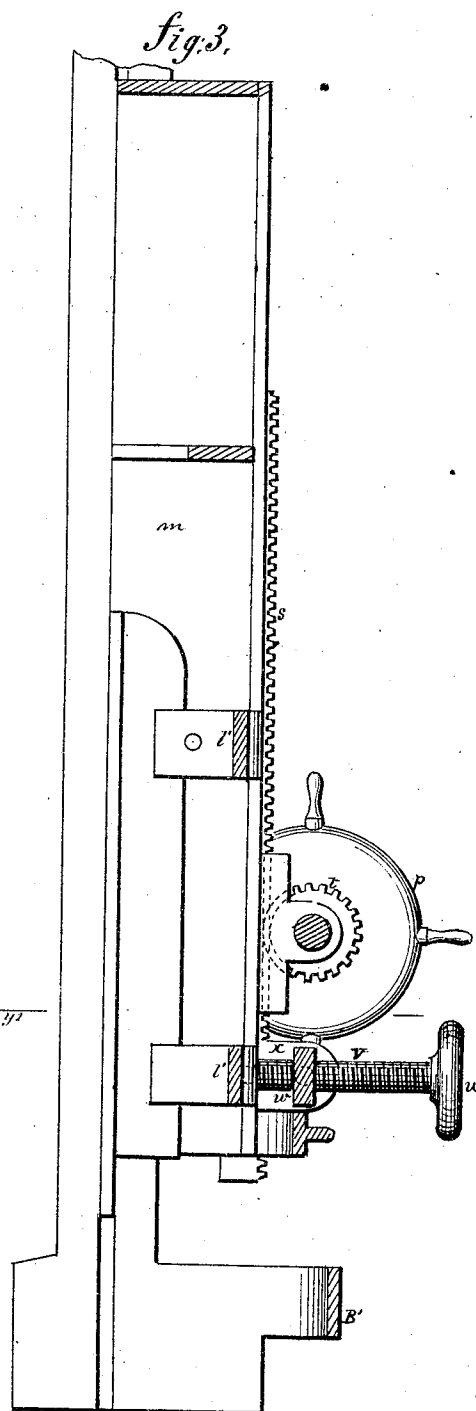
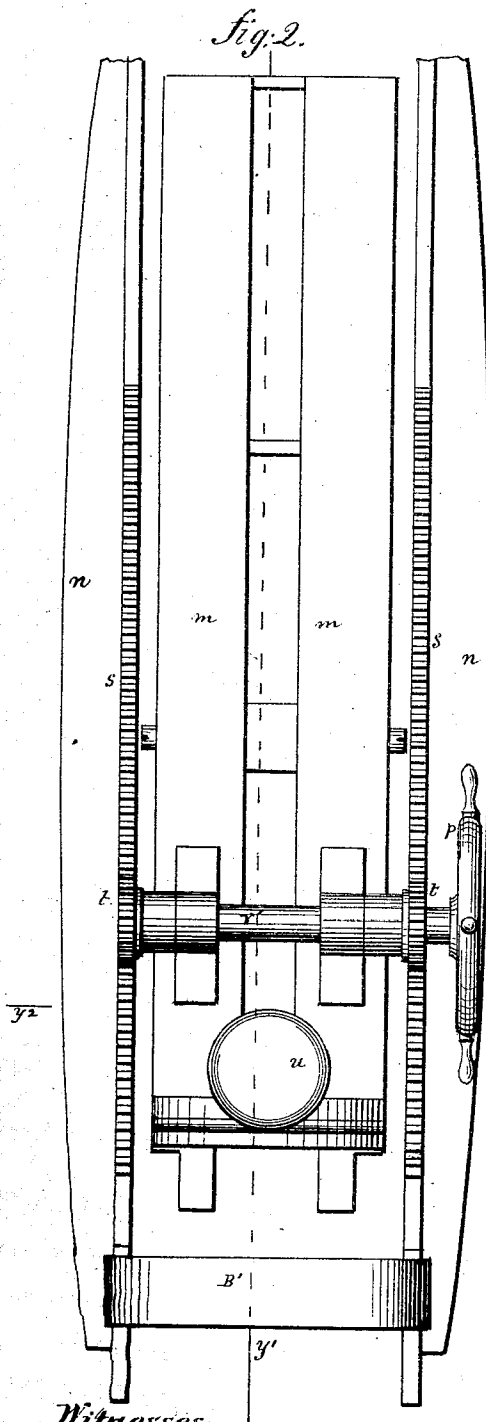
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Fig. 4.

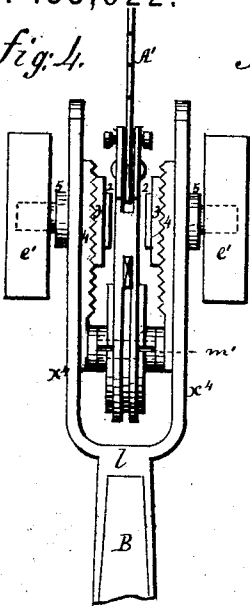


Fig. 5.

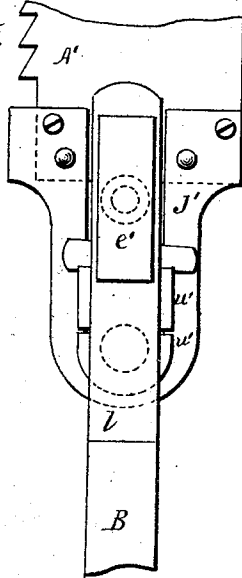


Fig. 6.

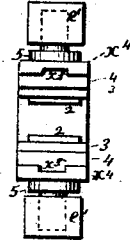


Fig. 12.

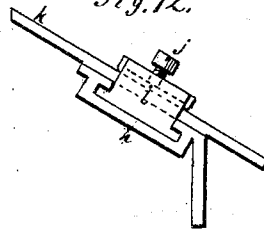


Fig. 7.

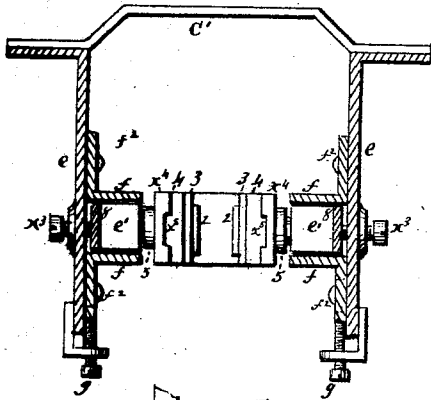


Fig. 8.

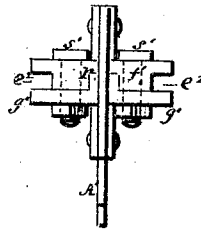


Fig. 9.

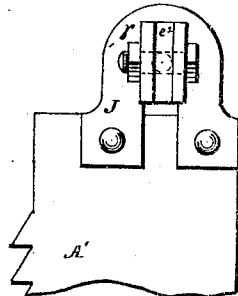


Fig. 11.

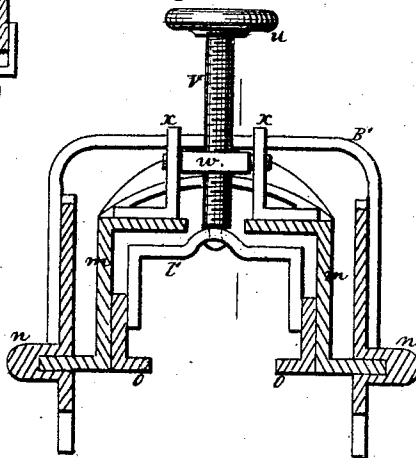


Fig. 13.

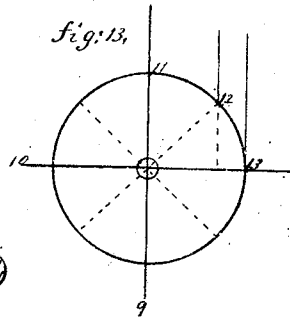
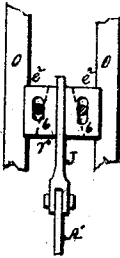


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM S. COLWELL, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN SAW-MILLS.

Specification forming part of Letters Patent No. **133,922**, dated December 17, 1872; antedated November 25, 1872.

To all whom it may concern:

Be it known that I, WILLIAM S. COLWELL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Saw-Mills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention consists in constructing the hangings of muley saws so that the several parts may be adjusted to give the saw any desired rake and cause it to cut uniformly in passing through the log or other timber, and compensate for the difference in the travel of its pitman and the crank to which it is attached.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawing which forms part of my specification, Figure 1 is a front elevation of my improvement in hangings for muley saws, and represents them connected with the saw-frame work and driving-gear; Fig. 2 is a back view of the upper hangings, representing the extreme upper part broken away; Fig. 3 is a vertical section of the same cut through at line y^1 in Fig. 2; Fig. 4 is a front view of a section of the saw, its pitman, and slides for the same, and also represents a front view of the several parts used for the purpose of attaching the lower end of the saw to the pitman; Fig. 5 is a side view of the same; Fig. 6 is an end view of the pitman, its slides, and the parts connected with it for pivoting the saw to the pitman; Fig. 7 is a transverse section of the lower hangings at line y^3 in Fig. 1, showing an end view of the slides, guides, and pitman; Fig. 8 is a top view of the cross-head to which the upper end of the saw is attached; Fig. 9 is a side view of the same; Fig. 10 is a front view of the same, showing it in position with relation to its slides; Fig. 11 is a transverse section of the upper hangings at line y^2 in Fig. 2; Fig. 12 is a side view of the adjustable finger-holders; and Fig. 13 is a diagram illustrating the difference in the travel of the pitman-crank with relation to the vertical and horizontal planes of its axis.

In the accompanying drawing, A represents the frame to which the hangings for the muley saw are attached. B represents the pitman, the lower end of which is attached to the wrist-

pin x^2 of the crank-wheel C, which receives its motion through the medium of the driving-pulley D. To the upper end of the pitman B is secured a forked end, l , between the arms x^4 of which are placed two plates marked 4, which are united or connected at the lower end with the stirrup wrist-pin m' . These pieces 4 are provided with tongues x^5 , (shown in Figs. 6 and 7,) which move in grooves on the inner side of x^4 , into which fit the corrugations of a washer, 3. Through the arms x^4 , pieces 4, and washer 3 pass the ends of the pivots marked 5, the inner ends of which are provided with screw-threads, on which are fitted screw-nuts 2. The arms x^4 and pieces 4 are provided with slots, which will allow the position of the pivots 5 to be changed with relation to the stirrup wrist-pin m' . The changing of the position of the pivots 5 is effected by unscrewing the nuts 2 and moving the pivots 5 and washers 3 up or down, as may be desired, and then securing them in a fixed position by screwing up the nuts 2. By this arrangement for the changing the position of the pivots 5 with relation to the stirrup wrist-pin m' , the lower end of the saw A' can be adjusted with relation to the rake given to it, and compensate for the difference in the forward travel of the saw in the operation of sawing, (the difference of the forward travel of the saw being due to the difference in the travel of the pitman-crank with relation to the vertical and horizontal planes of its axis,) whereby it will cut uniformly in passing through the log or other timber in the operation of sawing. The slides o are pivoted, about midway between their center and upper end, to the frame marked m . On the back of the frame m , between two lugs, x , is pivoted a screw-nut, w , through which passes a screw, V, the inner end of which is pivoted to the cross-bar l' , which connects together the lower ends of the slides o , their upper ends being connected by a cross-piece marked l'' . On the outer end of the screw V is a small hand-wheel, u . This screw is used in connection with the pivots of the slides for giving to them the proper incline, whereby the desired rake of the saw A' is obtained. The nut w is pivoted between the lugs x to allow it to assume the desired angle with relation to the inclination of the slides during the operation of changing their angle of inclination, thus allowing the screw V to move in the nut w freely, without any cramped action. The cross-

head *r* for the upper end of the saw, is constructed of parts *f*¹ and *g*¹, which are held together by means of bolts *s*¹, which pass through slotted openings, the part *g*¹ being provided with an incline, which moves upon an incline on the part *f*¹. The inclines and slots of the cross-head *r* are indicated at 6 in Fig. 10. The slides *o* are fitted to the recesses *e*². By constructing the cross-head *r* in sections, as shown by *f*¹ and *g*¹, and providing these sections with inclinations and slots, and holding the parts together by bolts *s*¹, the cross-head may be expanded outward, so as to compensate for the wear of the cross-head *r* and slides *o*. On the frame *m*, to which the slides *o* are pivoted, are arranged slide-bars *n* for the fingers *k*. These slide-bars are provided with racks *s*, which, in connection with the pinions *t* on the shaft *r*¹, are used for the purpose of raising or lowering the slide-bar by turning the hand-wheel *p*. To the lower end of the slide-bars *n*, (held in position with relation to each other and the frame *m* by the transverse cross-piece *B*¹), are attached pieces *h* provided with grooves in which are placed adjustable pieces *i*, and in which pieces *i* are placed the fingers *k*, the pieces *i* and the fingers *k* being held in position with relation to the groove-pieces *h* by means of set-screws *j*. The construction of the groove-pieces *h*, the adjustable pieces *i*, the fingers *k*, and set-screw *j*, and their arrangement with relation to each other and the mode of operating and adjusting the parts to each other and to the saw, will readily be understood by the skillful mechanic by reference to Figs. 1 and 12. On the pivots 5 of the pitman *B* are placed slide-blocks *e*¹, which move between slides *f* secured to the side-plates *e*, the upper and lower ends of which are stayed by means of transverse pieces *O*¹. The slides *f* are held in position with relation to the side plates *e* by means of set-screws *f*², which are placed in slots in the slides *f*, so that they may be adjusted upon the side plates *e* in the operation of lining up the saw-hangings through the medium of set-screws *g*. Between the slide-blocks *e*¹ and the plates *e* are placed plates 8, which are adjusted with relation to the slide-blocks *e*¹ through the medium of set-screws *x*³. By this arrangement of the plates 8 and the set-screws *x*³ a steady movement of the upper end of the pitman and a true vertical movement of the saw may be secured, and compensation obtained for the wear of the slide-blocks. To the upper end of the side plates *e* are attached a set of groove-pieces, *h*, for the adjustable pieces *i* and fingers *k*, hereinbefore described. The fingers *k* can be adjusted to saws of different widths, and are used to prevent the buckling of the saw. The difference in the travel of the pitman-crank with relation to the vertical and horizontal planes of its axis is clearly illustrated in the diagram shown in Fig. 13, in which line 9 represents the vertical plane of the axis of the crank or crank-wheel, and line 10 represents

the horizontal plane of its axis. Now, if the circuit in which the wrist-pin travels is divided into eight equal arcs, and the wrist of the crank on line 9, as indicated at the point marked 11, moves forward to the point marked 12, the travel of the wrist-pin on a horizontal plane will be greater than it will be in moving from the point marked 12 to the point marked 13. This difference in the travel of the wrist-pin with relation to the horizontal plane of the axis of the crank causes a difference in the cutting of the saw. To compensate for this difference I pivot the slides *o* for the cross-head *r* about midway between their center and upper end, and range the pivot-points 5 in the upper end of the pitman *B*, and the wrist-pin for the stirrup of the saw with relation to the said pivot-points of the pitman, as hereinbefore described, whereby I can give the saw any desired rake, and adjust its point of pivot in relation to the pivot-points of the pitman *B* so that the saw will cut uniformly in its passage through the log or other timber, and at the same time compensate fully for the difference in travel of the wrist-pin of the crank with relation to the horizontal plane of its axis. The saw is attached to its wrist-pin *m*¹ of the pitman *B*, and to the wrist-pin of the cross-head *r*, by means of stirrups *J* and *J*¹, and "brasses" *u*¹, all of which are of ordinary construction, and are secured to the ends of the saw in the ordinary manner.

When the several parts hereinbefore described are arranged with relation to the upper end of the pitman *B* and the saw as represented in the accompanying drawing, and the crank revolves in the direction of the cut of the saw, it is called a "front-door muley saw," but if the position of the pivot-points 5 and the stirrup wrist-pin *m*¹ be reversed in the forked end *l* of the pitman *B*, the saw may be converted into what is called a "back-door muley saw."

Having thus described the construction, arrangement, and operation of the several parts of my improvement in muley-saw hangings, what I claim as being of my invention is—

1. The cross-head *r*, consisting of pieces *f*¹ and *g*¹, and bolts *s*¹, constructed, arranged, and operating with relation to each other substantially as herein described, and for the purpose set forth.
2. The pieces 4, washers 3, nuts 2, pivots 5, wrist-pin *m*¹, and forked end *l*, constructed as herein described, and for the purpose set forth.
3. The combination of the pivot-points 5, slide-blocks *e*¹, plates 8, set-screws *x*³ and *g*, and adjustable guides or slides *f* and *o*, constructed, arranged, and operating with relation to each other as herein described, and for the purpose set forth.

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Witnesses:

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