G. H. Clemens,

Saw-Mill Head-Block.

No. 63,614. Patented Apr. 9, 1867.

Fig: 1.

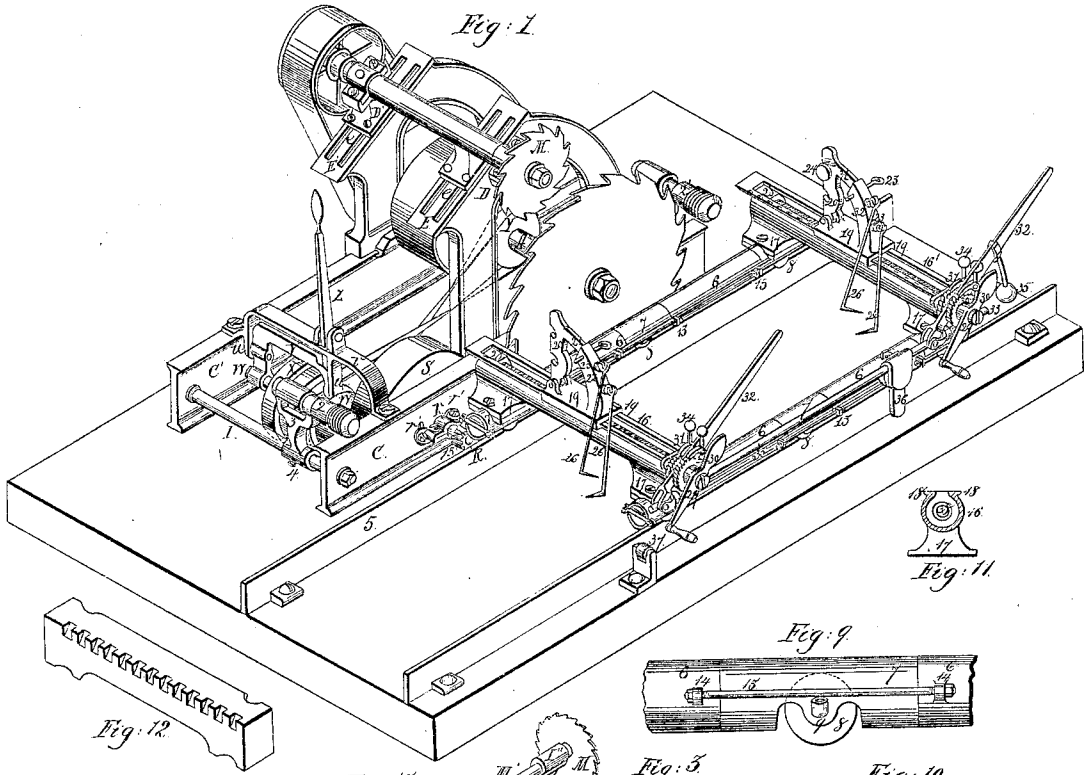


Fig: 11.

Fig: 12.

Fig: 9.

Fig: 13.

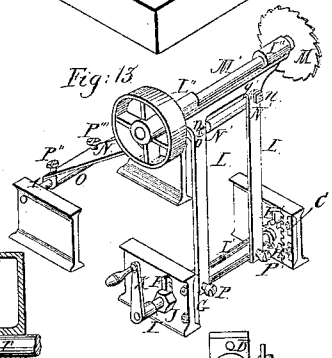


Fig: 3.

Fig: 10.

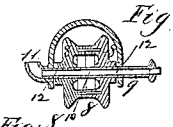


Fig: 6.

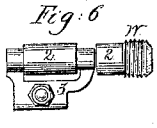


Fig: 5.

Fig: 8.

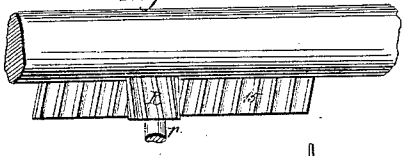


Fig: 7.

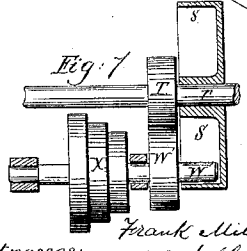


Fig: 2.

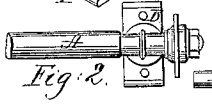
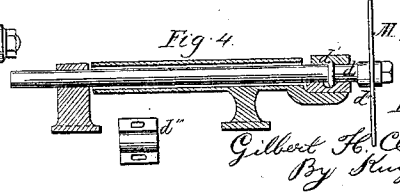


Fig: 4.



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United States Patent Office

GILBERT H. CLEMENS, OF CINCINNATI, OHIO, ASSIGNOR TO HIMSELF AND JOHN C. CRANE, OF THE SAME PLACE.

Letters Patent No. 63,614, *dated April* 9, 1867.

IMPROVEMENT IN HEAD-BLOCKS FOR SAW-MILLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GILBERT H. CLEMENS, of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Circular-Saw Mills; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

The improvements spoken of above are especially adapted to and embody new constructions of what is known as a portable circular-saw mill, which are as follows: A simple and effective mode of construction of saw-mill frame. A positive and accurate motion of feeding the log to the saw, and for relieving the same on the return movement of the log-carriage. A strong and simple construction of log-carriage sides, by means of the tubular sections employed. A new construction of log-carriage truck-wheels, which insures a more perfect lubrication of the same. A simple construction of head-block, which combines strength and compactness, from its being tubular in form. A new and improved construction of knee for head-block, which is susceptible of adjustment for either round or square logs, in connection with the curved guide and support for the rear of same when in any position. A combination of devices for the setting up of the knee, either separate from or simultaneous with each other, or automatically. A new and improved mode of constructing and supporting the bearing-rollers, as substitutes for the ordinary wedge-wheel and rollers. The application of the teeth, being placed on the face of the rack and pinion in an oblique position. An adjustable, intermediate support, resting upon the log-carriage sides. A new and improved mode of construction of the supporting-frame for the upper-saw attachments, which provides a ready adjustment of the same.

Figure 1 is a perspective view of the circular-saw mill, which illustrates my improvements.

Figures 2 and 3 represent a plan of the main saw-arbor bearing, as also a sectional view across the centre of same.

Figure 4 represents a sectional view of the upper-saw bearings and attachments, with saw-arbor in position.

Figures 5 and 6 represent the side and end elevations of a bearing-roller, and housing for same.

Figure 7 represents a side and sectional view of the feeding and reversing machinery in their relative positions.

Figure 8 represents an inverted view of both rack and pinion, as also section of carriage-side.

Figure 9 represents one of the tubular sections, and how employed to form carriage-side.

Figure 10 represents an end of tube in section, also truck-wheel and small hollow tube upon which the wheel revolves.

Figure 11 represents, in section, the tubular form of head-block, as also support underneath the same.

Figure 12 represents a perspective view of my adjustable intermediate support.

Figure 13 represents a new method of constructing frame for the support of the upper-saw attachments.

The main-saw arbor A rests upon spherical lined boxes, which are firmly secured to and supported by the sides of the saw-mill frame C C′. The upper-saw arbor rests in bearings D D′, which may be adjusted to any position on the inclined seats of uprights E E′ by bolts passed through slots *e* in said seats; but I prefer my improved supporting-frame, as shown in fig. 13, in which F F′ are two vertical slots in the sides of saw-mill frame, upon the inside of which are secured racks G G′, into which are geared pinions H H′, secured to the shaft I, which shaft projects through either side of frame, and is provided with nuts J J′, for the purpose of fastening frame in position when adjusted, as also to receive the crank K. The shaft I passes through sleeve L′, at the lower end of frame L, which forms a support for the bearings L″, in which the upper-saw arbor M′ and saw M revolve. N is a brace, which is hinged to the frame L at the top, by means of lugs N, and nuts *n*, while the extreme end of the brace is of sleeve form, through which passes the rod or bolt which performs the double office of a swinging-point for the brace, as well as to tie the sides of the mill-frame together. The elevation or depression of the upper saw to any position desired may be accomplished by the rotation of the shaft I, which causes the pinions H H′ to ascend or descend the face of the stationary racks G G′, before mentioned, and may be secured to the position desired by means of the tightening-nuts J J′, set-screws P P′, or both. A series of washers, Q Q′, being placed between the lugs N′ and frame L, will admit of the upper and lower saws being

brought perfectly parallel with each other; and in order that the upper and lower saws may be brought in perfect plane with each other, the upright frame L L′, and brace N, can be moved bodily right or left, as desired, and then secured by the set-screws P P′ P″ P‴. The upper-saw arbor M may be of uniform diameter its full length, except a single collar, *d*, which occupies a central position of the bearing L near the saw, which has an elongated recess, *d″*, which admits of an adjustment of the upper-saw arbor laterally, when desired, without the aid of the set-screws P P′ P″ P‴. The cap of bearing D has a recess, *d′*, of corresponding size and shape of collar, on arbor, as also elongated bolt holes, which not only admit of its being moved with the arbor, but employed as a guide for the collar. The shaft *r* is supported upon bearings, provided at either end with a lug, the holes through which correspond with slots *r′* in the sides of frame C, and admits of the vertical adjustment of the shaft *r*, which has secured on the outer end the pinion R, while upon the inside of the saw-frame it has secured a large friction-wheel, S, with concave rim *s*, as also a convex friction-wheel, T. Within the bridge U, from which project downwards two rigid hangers, *u*, is suspended an arched frame, V, provided at lower ends with bearings, within which the shaft W, with compound-pulley W W′, and step-pulley X attached, having connection by cross-belt with step-pulley Y on main-saw arbor. Z is a lever, pivoted to the bridge U, and provided with a forked end at lower extremity, which forms a saddle over a pin on end of frame V. If the lever Z stands vertical, no motion will be given the pinion-shaft *r*; but if a forward movement is given the lever Z, the effect will be to cause the small pulley W to be forced against the inside periphery of large friction-pulley S, and thereby produce a feeding motion of the log-carriage towards the saw. A reverse movement of the lever Z would cause the log-carriage to be driven rapidly to the contrary, by the friction-pulleys W′ and T being brought in contact with each other, the whole to be controlled by the lever Z, when provided with a spring to aid in holding the same to the position required. 1 1′ are heavy rods extending to and from the sides of saw-mill frame, provided at either end with a screw-thread and nut for the purpose of securing the sides together, thereby forming part of frame. 2 2′ are the front and rear bearing-rollers, having a left-hand thread cut upon a portion of their length at the end, formed in conical shape, and set in bearings of brackets 3, and may be secured in any desired position by means of the set-screw 4 bearing against the bolt 1. The bearing-rollers 2 2′, when properly adjusted, will extend slightly beyond the face of the saw, as also slightly above the top of head-block, and are intended to assist the oblique tooth, rack, and pinion, in the performance of guiding the log-carriage directly in a parallel line with the saw, and to bear the board away from the saw, thereby avoiding any friction and the use of the wedge-wheel commonly used. The conical ends of rollers 2 2′ serve to give a lateral motion to the log-carriage away from the saw, thereby giving a perfect freedom between the log and saw on the return movement of the carriage. The log-carriage is composed in part of cylindrical sections of timber, 6, with socket-ends to fit the cast-iron tubular couplings 7, and are firmly secured to each other by means of the longitudinal bolts 13, attached to eyes 14, passed through the sections of timber, as spoken of above. The tubular couplings are provided at their centres with an opening beneath, for the reception of the skeleton truck-wheels 8, as also projections 9, pointing downwards, through which passes the stationary tubular axle 10, upon which the truck-wheels revolve. The axle has a series of holes, 12, perforated in it, at or near the centre of wheel, so that the oil may flow freely from the axle to the hollow truck-wheel, thereby insuring a perfect lubrication of the same. The end of the tube may be turned upwards, and thereby form a feeder or reservoir on one end, while the other end may contain a simple plug to retain the oil in same. The truck-wheel will be composed of one piece, and not two, as before stated. The oblique tooth-rack 15 is provided at intervals with lugs, with which it is firmly bolted to the side of log-carriage. The base of head-blocks 16 16′, formed partially concave, and with projecting flanges, 17, are made to fit the partially convex top of the cast-iron tubular sections of log-carriage sides, for the additional security of confining the sides parallel with each other, thereby forming a firm and steady frame. The V-projections 18, employed to form the top of the head-block, also provide a firm support and guide for the base 19, upon which the knee 20 is hinged, as also a location for the series of indentations, to enable the insertion of a lever for a movement of, and, to a certain extent, the setting forward, of the log. A portion of head-block is removed, which admits the free movement backwards or forwards of the threaded sleeve upon the under side of base 19. The adjustable knee 20, hinged to the base 19, is an upright, provided on its face with one or more receptacles for the automatic anti-friction rollers 24, while upon the back projects a circular arc 21, which is guided by and in the counter-arc 22 projecting from the rear of base 19, and is held in any desired position by the pin 23 being passed through both knee and guide, the specified object of which is to compensate more readily, by its peculiar adjustment, for both round and square logs, with or without the aid of the friction-rollers; for, when the log has been squared, the knee may be brought to a vertical position and secured, after being relieved of the rollers above mentioned. One or more eyes, 25, of suitable form, may be secured to the back of the counter-arc and guide 22, with which to connect the eyes of the dogs 26 of the usual form. Underneath the base 19 is suspended a sleeve, 27, with thread inside of same corresponding with the setting-screw 28, which screw is supported at either end by suitable bearings, and which projects through and beyond the face of bearing secured to the rear end of head-block, and receives the counterbalance crank 29, ratchet-wheels 30, and setting-lever 32. The pawls 31 are pivoted to and are operated by the lever 32, and have counterbalances, 34, attached to them to aid them in their performance. The levers 32 are provided at their lower extremity with a forked end, which forms a saddle to fasten to, and, by their movement, give a lateral vibrating motion to the rod 33 connecting levers, thereby giving a simultaneous movement of the setting-screws which operate the two knees. A counterbalance, 35, aids the levers 32, and may be attached as circumstances may direct. The tappet 36, made fast to and projecting downwards from the rod 33, strikes the stationary roller 37 upon the completion of the return movement of the log-carriage, thereby causing the log to be fed forward by the automatic movement of the rod 33, transmitted to the levers 32, and hence to the setting-screws 28. The head-blocks may be operated with or disengaged from each other by an instantaneous movement

of either lever which will engage or disengage the pawls through and by the medium of the counterbalances attached to them. I have provided what I term an adjustable intermediate support, for the middle portion of a long log, which may be a simple casting of the form shown in fig. 12, being thicker one way than the other, and provided upon the edge of either side with a series of indentations similar to those upon the main head-blocks, and intended for the same purpose. The forms of construction illustrated above may be modified while yet retaining all the essential points of my invention; thus, for example, in constructing a left-hand mill, the thread on bearing-rollers, the rack and pinion teeth, as also the mechanism for setting up the knees, will necessarily have to be changed from a right to a left-hand position.

I claim herein as new, and of my invention—

1. The manner of constructing, supporting, and adjusting the upper saw of a circular-saw mill, by the use of a hinged frame, L N, pinions H H′, racks G G′, and nuts J J′, as also the use of the set-screws P P′ in combination with the above, and for the purposes set forth.

2. The upper-saw arbor, provided with a single V-shaped collar *d*, in combination with the recesses *d′* and *d″* in both the bearing and cap.

3. The use of the oblique teeth, in combination with the construction of a rack and pinion, for the specified purpose of circular-saw mills only.

4. The bearing-rollers 2 2′, formed with conical ends, and screw-thread periphery, in part only for the specified uses herein mentioned.

5. The roller-housing 3, as constructed in combination with the rod making part of mill-frame, as also the set-screws 4, all to operate in the manner and for the purposes set forth.

6. The vertical vibrating-frame V, lever Z, pivoted to the bridge U, as also the pulleys W W′, and pulleys S *s* and T, all in combination with each other, for the purpose of feeding and reversing the log-carriage, as explained.

7. The log-carriage side, formed of the metal tubular couplings 7, as also the cylindrical sections of timber 6, united together by a series of bolts, 13, and eyes 14, the tubular couplings constituting the housings for the supporting-truck wheels, substantially as described.

8. The construction and application of the perforated tubular axle 10, oil-feeder 11, and supporting-wheel 8, all in combination with each other, substantially as described.

9. The tubular form of head-blocks 16 16′, when provided with the partially concave flanged supports 17 underneath, and the V-projections 18, and continuous slot on top, as also a series of indentations upon one or both sides of same, constructed in combination with each other, and for the purposes set forth.

10. The adjustable knee 20, and circular arc 21, when hinged to the base 19, and guided by the counter-arc 22, and held in position by the pin 23, and provided with anti-friction rollers, to operate in conjunction with each other, for the purposes as substantially described.

11. While disclaiming the broad idea of so constructing a saw-mill that the knees may be set either separately or simultaneously by means of a lever, I claim the combined arrangement of the setting-screw 28, ratchet-wheels 30, pawls 31, lever 32, counterbalances 34, 35, and connecting-rod 33, constructed and operating substantially as and for the purpose set forth.

12. The application of the tappet 36, secured to the rod 33, also the roller, set in suitable housing, and stationed in position to produce a simultaneous and automatic setting forward of the knees, substantially as set forth.

13. The use of the adjustable intermediate support, in combination with and for the purposes set forth in the foregoing claims.

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Witnesses:

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