

(No Model.)

3 Sheets—Sheet 1.

D. B. HANSON.
SAWMILL SET WORKS.

No. 533,534.

Patented Feb. 5, 1895.

Fig. 1.

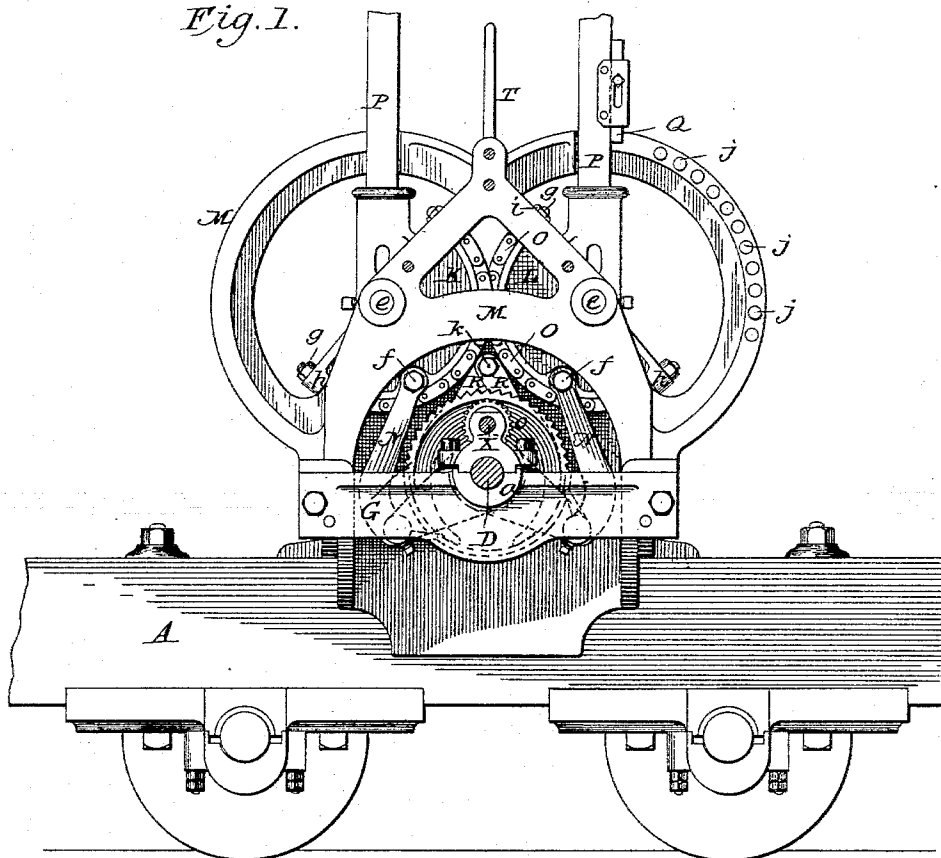
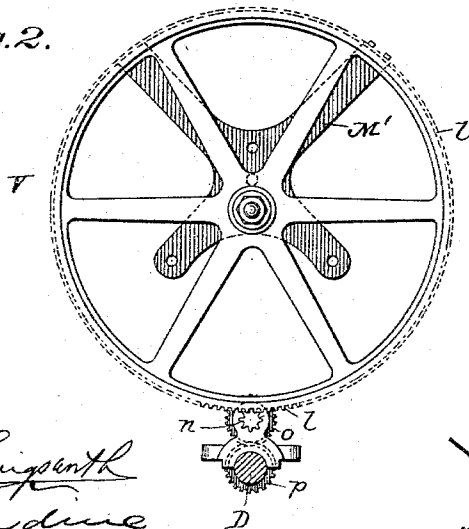


Fig. 2.



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(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

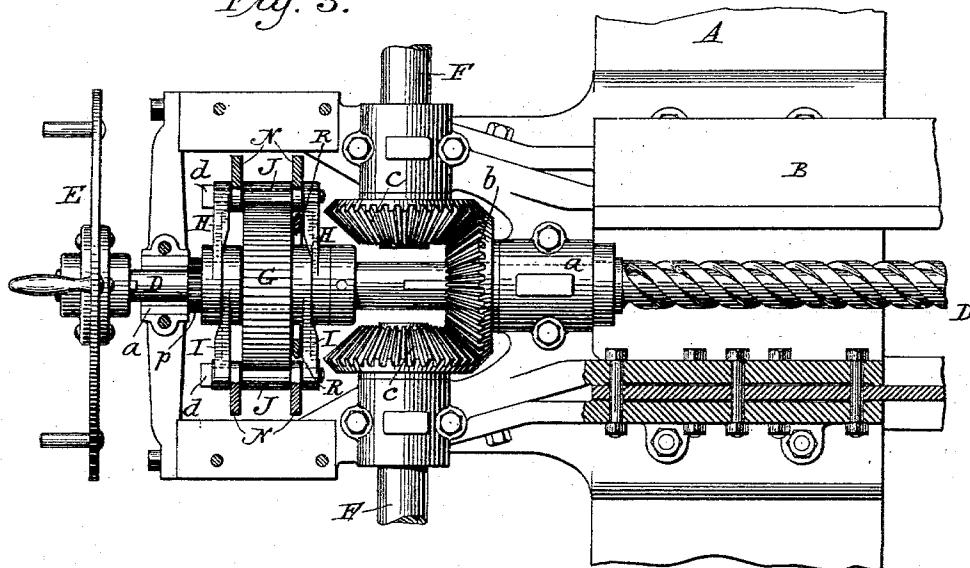
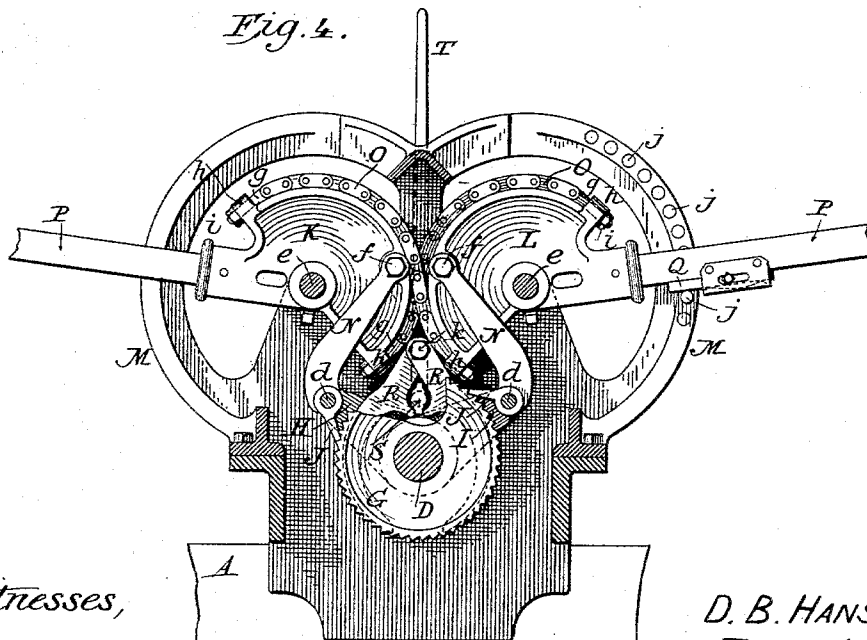


Fig. 4.



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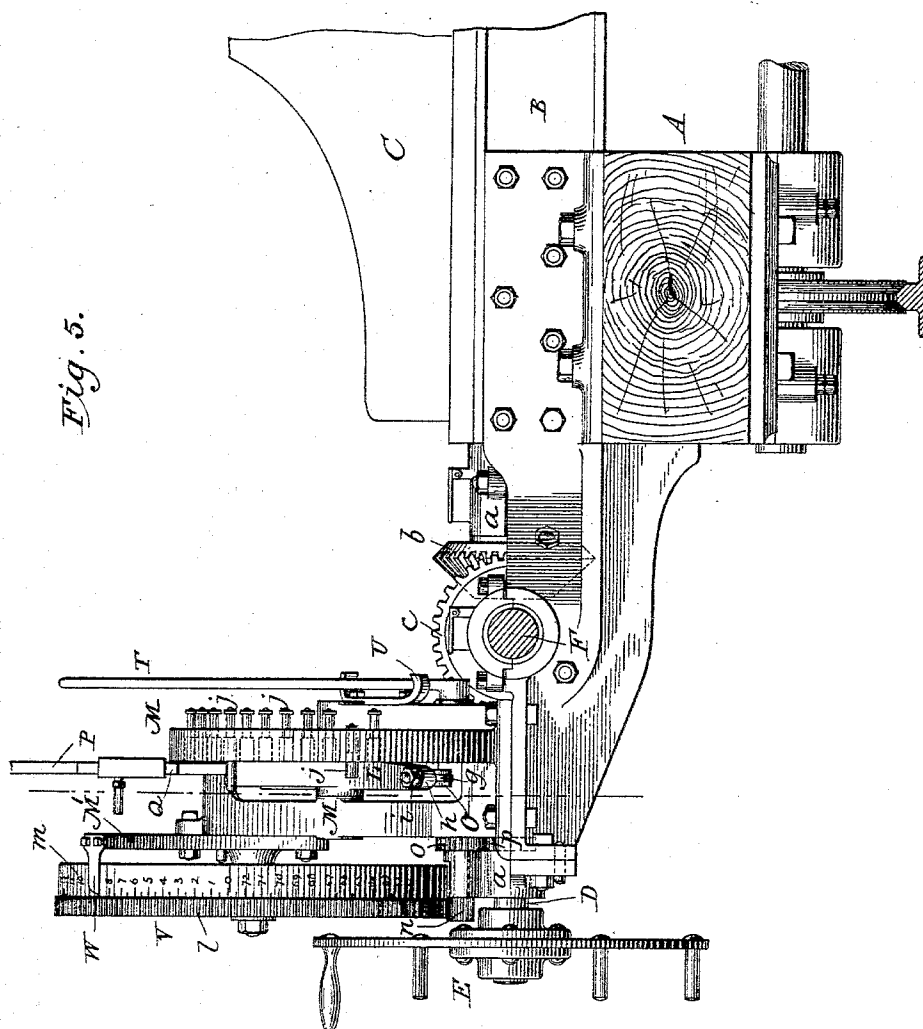
(No Model.)

3 Sheets—Sheet 3.

D. B. HANSON.
SAWMILL SET WORKS.

No. 533,534.

Patented Feb. 5, 1895.



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UNITED STATES PATENT OFFICE.

DEMPSEY B. HANSON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO THE EDWARD P. ALLIS COMPANY, OF MILWAUKEE, WISCONSIN.

SAWMILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 533,534, dated February 5, 1895.

Application filed October 24, 1894. Serial No. 526,850. (No model.)

To all whom it may concern:

Be it known that I, DEMPSEY B. HANSON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Sawmill Set-Works, of which the following is a specification.

My invention relates to saw-mill set-works, and consists in various novel features, combinations, and details of construction hereinafter set forth, chief of which is a double lever mechanism, whereby the knee may be operated from either side of the screw, or by two operators on opposite sides thereof.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a front elevation of the improved mechanism, the hand wheel and the dial being removed to show the parts in rear thereof; Fig. 2, a face view of the dial wheel and its gearing, together with the supporting frame of said dial; Fig. 3, a top plan view, partially in section; Fig. 4, a vertical section on the line $x-x$ of Fig. 5, showing the pawl-and-ratchet mechanism in front elevation; and Fig. 5, a side elevation.

The present invention is designed primarily to meet the requirements of those regions in which very large and heavy logs are handled, demanding a large expenditure of force to operate the set works; but the improvements are applicable generally to saw-mill machinery of all grades.

The construction will be explained with the aid of the drawings, and the operation and peculiar advantages thereof will be stated as the description proceeds.

A indicates a sill or timber of a traveling wheeled carriage, and B, a head-block firmly secured thereon, several such head blocks being employed, and arranged to extend across the log frame as usual. In or upon each head block there is mounted a knee C, of any suitable description, which knee is moved along the head-block by means of a screw, D, journaled in boxes or bearings a, a , and provided with a hand-wheel E. The hand wheel is provided for the purpose of turning the screw backward, to recede the knee, but when a log is upon the head blocks, greater power is re-

quired for turning the screw than is afforded by such wheel, and a pawl-and-ratchet mechanism is therefore provided. It is to this mechanism that my invention more especially pertains.

For the purpose of causing the several knees to advance or recede in unison, each screw D has keyed fast upon it a bevel pinion or miter gear, b , which, meshing with similar pinions c keyed fast to the different sections of a divided or sectional shaft F, cause said shaft to rotate in unison with the screws, and the screws to rotate in synchronism with one another, as is well understood.

The pawl and ratchet mechanism may be applied to but one of the screws D, or to two or more, as deemed advisable. Hence it will suffice to describe it in connection with one of them.

G indicates a ratchet wheel keyed or otherwise made fast upon the screw D, and having teeth carefully and uniformly cut.

H and I indicate two pawl-carriers or yokes, each comprising two arms having hubs bored to fit accurately upon an unthreaded portion of the screw stem or shaft D, the arms of each yoke being connected by a cross rod or bolt d .

Loosely hung upon each rod or bolt d is a dog or pawl J, adapted to engage with the teeth of the ratchet wheel G, said pawls being kept in working relation to the wheel either by gravity or by springs, as usual.

K and L indicate two sector-shaped castings, each of which is mounted upon a pivot bolt or shaft e , journaled or supported in a frame M, rising from a forwardly-projecting portion of the head-block B, as shown in Figs. 1, 4 and 5, the sectors being free to rock or turn with or upon the shafts e . In practice it is preferred to journal the shafts e in the frame, and to fasten the sectors thereon by means of set screws, as this arrangement permits the use of shafts without shoulders or reduced ends, yet insures their retention in place by reason of the sectors being between two upright members of the frame M.

N N indicate connecting bars, arranged in pairs, each pair connecting one of the pawl-carrying arms H I, with one of the sectors K, L, as shown in Figs. 1, 3 and 4. The connecting bars N are perforated to permit their

lower ends to encircle the bolts d , d , and their upper ends to receive bolts f , f , which latter pass through the respective sectors,

For the purpose of causing the two sectors to move in perfect unison, and to enable the mechanism to be operated by power applied to and through either sector, they are connected by two flexible bands O , O , here represented as flat chains, each extending from the upper extremity of one sector to the lower extremity of the other, crossing at the point of nearest approach of the two sectors, and made fast to said sectors at their ends.

The ends of the bands O O are each provided with a tang or stem g , which passes through a lug h on the sector, and is threaded to receive a retaining nut i . This construction not only affords a secure fastening, but it also provides for drawing the bands taut, and for adjustment to bring the two sectors into proper relation.

While I prefer chains, I do not restrict myself to their use, but propose to use canvas, leather, steel, phosphor bronze, or any other suitable material possessing the requisite strength and flexibility.

Each sector K and L is provided with a hand lever P , preferably made separate and inserted in a socket formed in casting the sector.

From what has been stated it will be apparent that by oscillating either lever P , the two sectors will be caused to rock upon their pivots and to carry up and down the connecting bars N N and the pawl-carriers H I with their pawls J . Said pawls are arranged with their free ends forward of their pivots, or in the direction of rotation of wheel G , and being on opposite sides of the screw shaft D , it follows that when the pawl carriers are raised, the left hand pawl will ride back over the teeth of the ratchet wheel, while the right hand pawl will engage with and turn the wheel. Upon reversal of the direction of movement of the pawl-carriers and pawls, this action will be reversed, and thus a continuous rotation will take place so long as the sectors are oscillated. The arrangement illustrated is for a right hand screw, which, being turned to the left, will advance the knee.

To regulate and nicely determine the throw of the levers P and the consequent advance of the knee at each operation thereof, I provide the frame M with a series of sliding stop pins j , any one of which may be drawn forward into the path of the lever P , as shown in Fig. 5, thereby limiting the downward movement of said lever. Machinery of this character is subjected to rough usage and must therefore be strong and heavy. Hence it is important that the stop pins j be made large, and that they be not placed so close together as to weaken the portion of the frame in which they slide. At the same time it is necessary to provide for comparatively slight variations in the limit of the throw of the lever P . To attain these two objects, I provide the lever P with a sliding bar or bolt Q , movable within

a shell or casing on the lever, as shown in Figs. 1, 4 and 5. This bolt is of a thickness equal to half the distance from the bearing face of one stop pin to that of the next, and is so arranged that when moved in one direction it shall come between the lever P and the stop pin, but when moved in the opposite direction it shall clear the pin. It will readily be seen that this bolt thus affords a means of securing adjustments intermediate of those afforded by the stop pins and the lever itself, and hence the pins may be larger and farther apart than would otherwise be practicable.

It is desirable and customary to recede the knees rapidly, to save time, and this may readily be done by merely turning the hand wheel E , provided the dogs J be thrown and held out of engagement with the ratchet wheel. To accomplish this, I provide two throw-out plates or "spreaders" R , which are hung from a bolt or stud k projecting from frame M . These plates are curved to conform to the circumference of wheel G , or nearly so, but by reason of the location of their pivot or point of suspension they swing inward sufficiently to carry their outer edges within the circle of the bases of the ratchet teeth. If deemed advisable, a spring or springs may be employed to move and hold the plates in the position stated.

Between the plates or spreaders there is arranged a rocking head S , which stands normally in the position indicated in Fig. 4, or with its major axis vertical. The head is carried by a stem or short shaft, journaled in frame M , and furnished with a hand lever T , which being thrown from its normal position, rocks the head S and causes the latter to bear against the inner edges of the plates or spreaders R R , and to move said plates outward to or beyond the crests of the ratchet teeth. The pawls J J are extended beyond the face of the ratchet wheel G , on the rear side, and are consequently engaged by the spreaders R R , and by them thrown out of engagement with the teeth of the ratchet wheel when the head S is rocked. A suitable stop bar U , limits the throw of lever T .

V indicates the dial wheel common to set works. It consists in the present instance of two concentric and advisably integral portions l and m , the forward provided with gear teeth on its circumference, and the latter having a smooth circumference, graduated, as shown in Fig. 5, the scale or graduations being read from or in connection with a fixed indicator arm W , secured to the framework. The wheel V is mounted upon a stud or axle projecting from a detachable frame plate M' , bolted or otherwise secured to frame M , and it receives motion from screw shaft D , through the medium of a shaft X journaled in the frame and provided at opposite ends with pinions n and o , the former meshing with the toothed portion l of wheel V , and the latter meshing with a pinion p , on the screw shaft D .

The apparatus being thus constructed, and

the knees being set at their outermost positions, the dial will stand with its zero mark at the pointer or indicator W. The appropriate stop pin *j* being thrown out to limit the throw of lever P, said lever is moved to the stop and in so doing rotates the screw D and advances the knee C, the other screws and knees moving in unison as before explained, and the log or cant being set forward a predetermined distance, or the lever may be thrown down to its limit and restored to its upright position, according to the extent of advance desired and the adjustments made. On the up-stroke, the levers P come in contact with fixed stops on the frame M. Hence the advance of the knees for each stroke or movement of the levers P is definitely and accurately determined.

The levers P are made removable, but it is deemed advisable to fasten the right hand lever in its socket by a bolt or other removable fastening to prevent accidental displacement, as this lever is required to determine the range of movement of the parts. The left hand lever is, however, preferably left free to be withdrawn from its socket at will, as it is not always required for use but is intended primarily to enable a helper to assist the regular attendant when extra power is required to operate the mechanism. It happens not unfrequently that a left handed operator is employed as the regular attendant, in which case both levers may be made fast in their sockets. It will be seen that by this double lever arrangement each operator is made independent of the other,—that is to say, is furnished with a lever of its own and stands at the side of the screw opposite that at which his companion stands, so that there is no interference or crowding. Each operator is consequently enabled to apply his full strength to good advantage. Again, if for any reason the attendant leaves his usual stand at the right of the screw and passes to the other side, he can operate the set works without returning to said stand.

Suitable foot boards or platforms will be provided for the operators, and the bolt Q will be provided with a friction spring as indicated in Fig. 4, or with other means for holding it at its proper adjustment.

The details may be varied within reasonable limits, according to the conditions of use, and the double lever may be applied to any ordinary or well known type of knee-advancing mechanism.

The sectors may be geared together, though the connection indicated is preferable because it permits no lost motion and gives a smoother action than gearing.

The stops *j* may be pivoted in the frame M

so as to swing into and out of operative position instead of sliding, and the same is true of the stop Q carried by the lever P.

Having thus described my invention, what I claim is—

1. In combination with a saw mill carriage and head-block, a knee mounted and movable upon said head-block, a screw directly engaging with and serving to advance and recede said knee, a pawl-and-ratchet mechanism for actuating said screw, and two coacting levers connected with and serving to actuate the pawl-and-ratchet mechanism, whereby either or both levers may be employed to move the knee.

2. In combination with the knee of a saw mill carriage, a feed screw for advancing and receding said knee, a ratchet wheel carried by said screw, pawl carriers and pawls for rotating said ratchet wheel, and two levers connected with and serving both jointly and independently to actuate the pawl carriers.

3. In combination with the screw shaft of a saw-mill knee, a ratchet wheel carried thereby; pawl-carriers provided with pawls to engage with said wheel, two connected sectors each provided with a hand lever, and links or bars connecting the sectors and the pawl-carriers, substantially as described; whereby the screw may be turned by either or both levers at will.

4. In combination with the screw shaft of a saw-mill knee and with its pawl-and-ratchet mechanism, two sectors each connected with the pawl-carriers and each furnished with a hand lever, and flexible bands connecting the two sectors substantially as described and shown, whereby the two sectors are caused to move in unison.

5. In combination with pawl and ratchet mechanism, two sectors K, L, connected with and serving to actuate said mechanism, and flexible bands proceeding from the upper extremities of the respective sectors, crossing each other, and proceeding thence to the lower extremities of the respective sectors, and adjustably connected therewith, substantially as set forth.

6. In combination with a pawl and ratchet mechanism, two sectors K, L, for actuating said mechanism, and flexible bands connecting the sectors and having their ends provided with threaded stems *g*, passing through lugs *h* of the sectors, and held in place by nuts *z*.

In witness whereof I hereunto set my hand in the presence of two witnesses.

DEMPSEY B. HANSON.

Witnesses:

NORMAN A. ROOT,
JOHN SIMONDS.