(No Model.)

J. P. McCLURE.

SAWMILL SET WORKS.

No. 495,259. Patented Apr. 11, 1893.

Fig. 1.

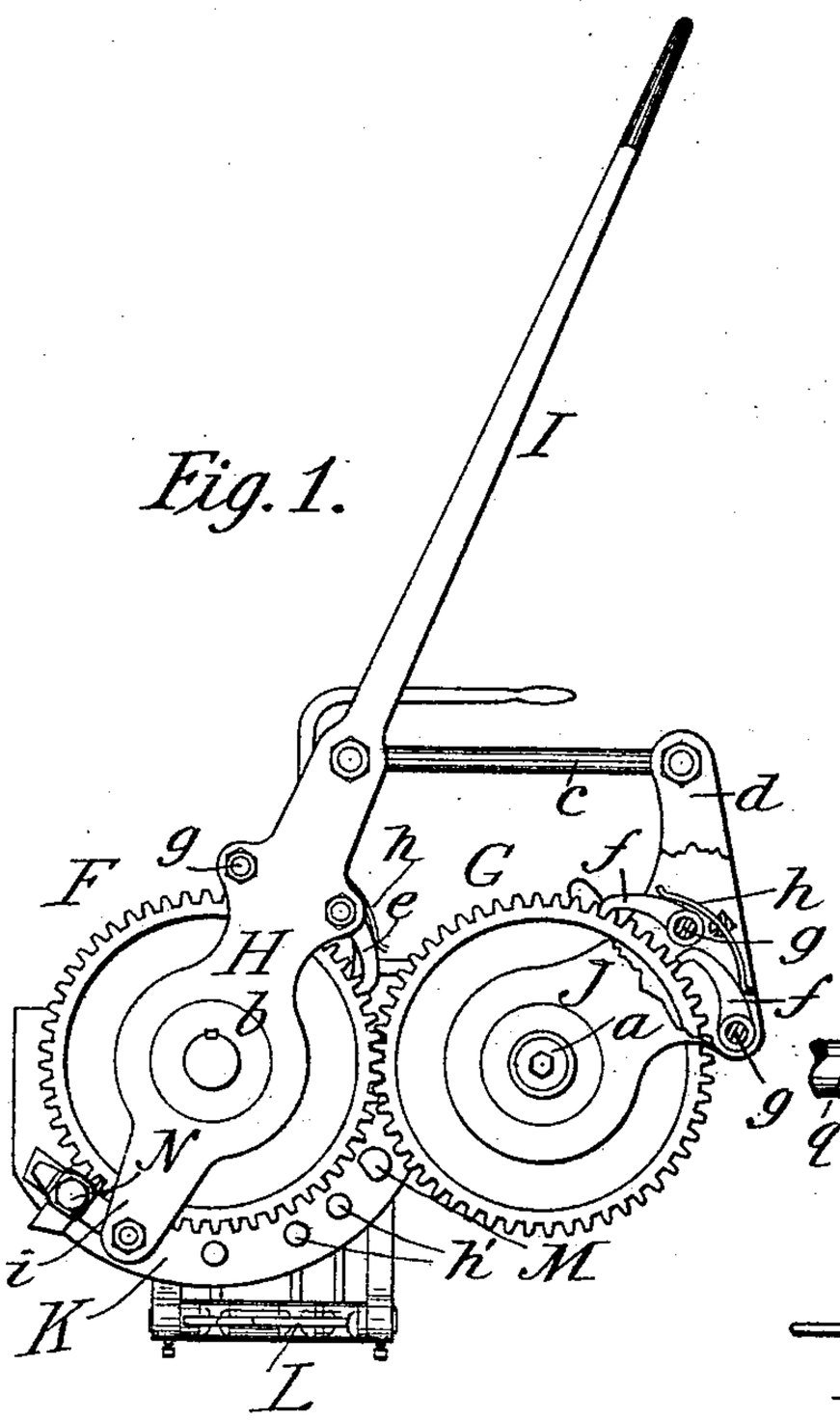


Fig. 5.

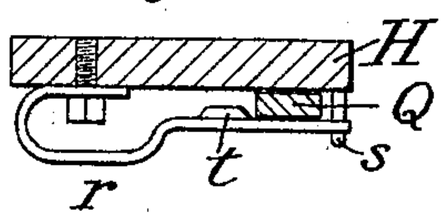


Fig. 2.

Fig. 4.

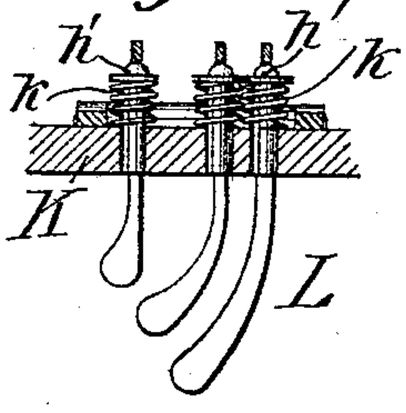
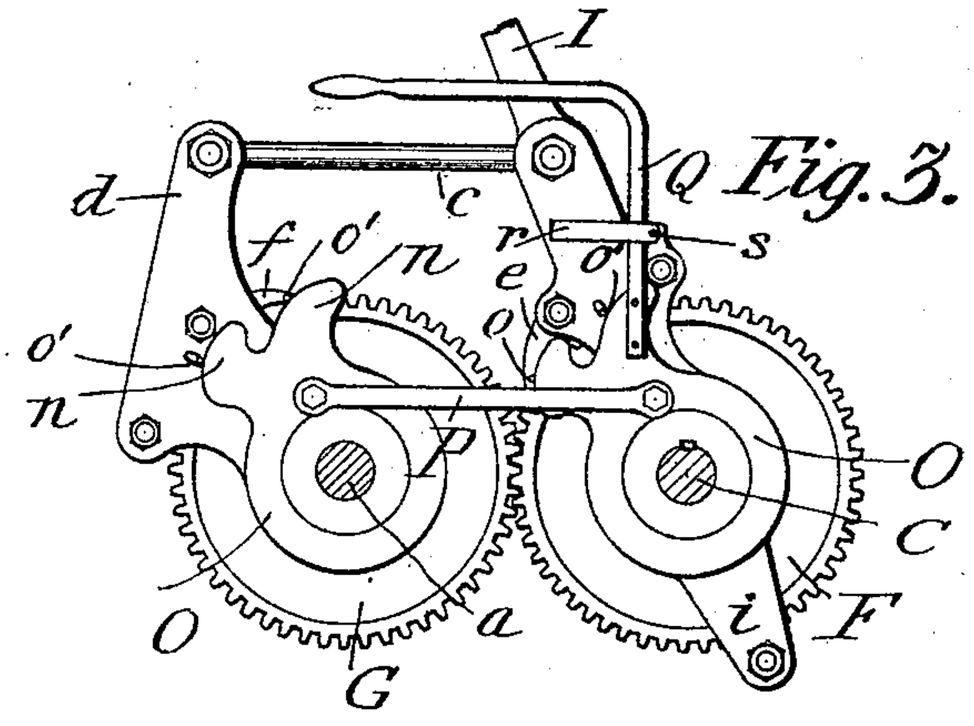


Fig. 3.



Witnesses,
J. N. Albright.
W. B. Bryan.

Inventor,
James P. McClure.
by Spear & Seely,
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES P. McCLURE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO HENRY L. TATUM AND JOHN J. BOWEN, OF SAME PLACE.

SAWMILL-SETWORKS.

SPECIFICATION forming part of Letters Patent No. 495,259, dated April 11, 1893.

Application filed April 27, 1891. Serial No. 390,545. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. McCLURE, a citizen of the United States, and a resident of the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Sawmill-Setworks; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to saw mill set works for adjusting the position of the head blocks and log, after each cut of the saw, according to the desired thickness of boards. It belongs to that class of set works in which an operating lever, carrying pawls, transmits motion through a toothed wheel to the head block shafts; and in which a series of stop pins under control of the operator are so arranged as to limit the throw of the lever, and thus give the exact amount of movement to the screw and the knee or standard of the head block. Set works of this class are generally operated through the medium of a ratchet wheel mounted on the screw shaft and having pawls engaging with it on opposite sides. The operating lever is connected to a pawl carrier having a pawl which operates directly upon the ratchet at one stroke of the lever; but in order to obtain a continuous movement in the same direction at the next stroke through the opposite pawl, it is necessary to use an external slide or yoke to which the pawl carrier for the other pawl is connected by an arm, another arm extending to the operating lever itself. Movement of the ratchet wheel at alternate strokes is thus transmitted indirectly through these arms and yoke, and considerable lost motion results.

It is the object of my invention to dispense first with the ratchet wheel, and to substitute a spur gear which is much stronger; further to provide an arrangement of gearing by which a positive, direct application of power is made to the screw shaft at both throws of the lever, the slides and connecting arms being removed and the lost motion due to their use being wholly prevented; further to make a more simple and compact machine which will take up less room in use.

Briefly speaking my set works, consist of two intermeshing spur gears, one fixed to the screw shaft, the other loose on a suitable journal. A pawl case is provided for each wheel, said pawl cases being connected together and to the operating lever. At one stroke of the lever, power is applied directly through the fixed gear; and at the return stroke is transmitted through the loose gear, there being practically no lost motion in intermeshing spur teeth. In connection with these parts, I have provided a novel arrangement of stops, and an improved pawl lifting mechanism for throwing out all the pawls simultaneously, when necessary.

For a full comprehension of my invention reference must be made to the accompanying drawings in which:—

Figure 1 is a front elevation of my set works. Fig. 2 is a side elevation, with the frame for the head block screw broken away. Fig. 3 is a rear elevation of the mechanism for throwing out the pawls. Fig. 4 is a detail view of the stops and treadles for operating them. Fig. 5 is a detail of the device for holding the pawl lifting lever.

The general construction of saw mill set works being well known to those skilled in the art, I have in the drawings shown only the application of my improvements to a single head block.

A represents the frame upon which slides the knee or standard B in the usual manner.

C is the screw shaft working in a Babbitt bushing in the standard B and having keyed upon it the beveled pinion D.

E represents another beveled pinion in engagement with pinion D, and supposed to be keyed to the countershaft which transmits power to operate the other knee.

The shaft C extends forward beyond the frame and has keyed to it, the spur gear wheel F, while G represents another spur gear of the same size and having the same number of teeth, which meshes with the wheel F, and which is loosely mounted upon a pin *a*, connected to, or formed with the frame of the machine.

H represents the pawl case for the wheel F, having bearings in its lower end which surround and move freely upon the slightly projecting hubs *b* of the wheel F, the ends of the pawl case projecting down on each side of the wheel.

I is the operating lever which forms part of the pawl case, or is secured to it. This lever

is connected by a rod *c* to an upwardly projecting extension *d* of the pawl case J. The latter is connected to the hub of the spur gear G and moves freely thereon, motion being transmitted to it through the rod *c*. Each pawl case carries two pawls *e*—*e*, *f*—*f*, pivoted on transverse pins *g*, and held in engagement with the gear wheels by double acting springs *h*. The pawls operate on the push, and disengage on the pull. Motion of the lever in either direction is communicated directly to the screw shaft, the latter always moving in the same direction. This is accomplished at one throw of the lever by the direct movement of the fixed gear F, and at the other by the movement of the loose gear G, transmitted directly to gear F. By using two pawls for each wheel, one of which is in engagement while the other rests upon a tooth (Fig. 1), I am enabled to secure much greater accuracy in adjustment and a subdivision down to one-twenty-fourth of an inch if necessary. But there is another advantage in using two wheels and two pawls upon each. With a screw of four inches pitch, ninety-six is the best division for the gear to subdivide into inches and fractions. By using two wheels of forty-eight teeth and two pawls upon each, I produce the same effect, as in a single ratchet wheel of ninety-six teeth. Consequently the teeth can be made of double the size and hence greater strength. Obviously also a gear tooth is much stronger than a ratchet tooth even of the same pitch. By using gear wheels in positive engagement, power is applied directly to the screw shaft, without any of the lost motion resulting from the use of a single ratchet wheel and the indirect connections required to operate one of its pawls.

K represents the sector bolted to the frame behind the gear F and extending down below said gear. It is perforated at proper intervals to permit the stops *h'* to project into the path of the lower extension *i* of the pawl case H. These stops are headed pins provided with springs *k* which keep them out of engagement except when the treadle levers L are depressed. The treadle levers are pivoted upon a rod *l* journaled in hangers *m* secured to the sector, and their upturned rear ends bear upon the stops as shown in Fig. 2. This arrangement of the sector, stops, and treadles below the machine makes an exceedingly compact construction enabling me to use very short and strong treadle levers.

M represents the fixed stop at one end of the sector, and N a pivoted star-shaped stop having arms of unequal length and placed at the other end.

I have shown in Fig. 3 a novel pawl-lifting mechanism for throwing out all the pawls, when the head block standards are to be moved back by the usual hand wheel.

Fig. 3 is a rear elevation of the gears F and G. Pivoted upon the projecting hub of each of the gear wheels, and just in rear of the pawl case is a disk O. Each disk is provided with two cams *n*—*n*, which may be caused to bear upon pins *o*—*o'* projecting from the pawls, the pins *o'* passing through short slots in the pawl cases. The disks O are connected by a rod P, and to one of them is connected the operating lever Q. A simultaneous movement may thus be given both disks, forcing the cams against the pins *o*—*o'* and raising the four pawls simultaneously.

To the pawl case H (see Fig. 5) is attached a spring *r*, the free end of which is guided by a pin *s* and which carries a beveled stud *t*. The operating lever Q is forced past this stud in operating the cams, and is held rigidly in either position, whether the pawls are thrown out, or are in engagement.

The hand wheel for reversing the screw is not shown in the drawings but the projecting end of the shaft to which it is attached in the usual way, is indicated at *q*.

What I claim is—

1. In saw mill set works, the combination with the head block screw shaft of gear wheels for operating the same, a pawl case and lever, having a downwardly projecting extension and mounted concentrically with one of said gear wheels, a sector secured to the frame of the machine, and projecting downward below said gear wheel, and a series of treadle stops, adapted to be projected through said sector into the path of the pawl case, substantially as set forth.

2. In saw mill set works, the combination with two intermeshing spur wheels for operating the head block shafts, a pivoted pawl case and pawls for each spur wheel and an operating lever, of loose cam disks connected together and mounted concentrically with the respective spur wheels, and adapted to bear upon all the pawls, substantially as and for the purposes set forth.

3. In combination with the gear wheels connected to the head block screw shaft and provided with pawl cases carrying pawls for operating said wheels, pivoted cams connected together adapted to bear on all the pawls, an operating lever connected to one of the cams, and a bevel edge stud located in the path of the lever for holding said lever at one extremity or the other of its movement, substantially as described.

4. In combination with the head block screw shaft, the gear wheels connected therewith, and provided with pawl cases having slots therein, pawls pivoted within the cases having pins projecting through the slots, connected cam disks bearing on the pins, and a lever for operating said cam disks, substantially as described.

In testimony whereof I have hereunto affixed my signature, in the presence of witnesses, this 30th day of March, 1891.

JAMES P. McCLURE.

Witnesses:
L. W. SEELY,
H. J. LANG.