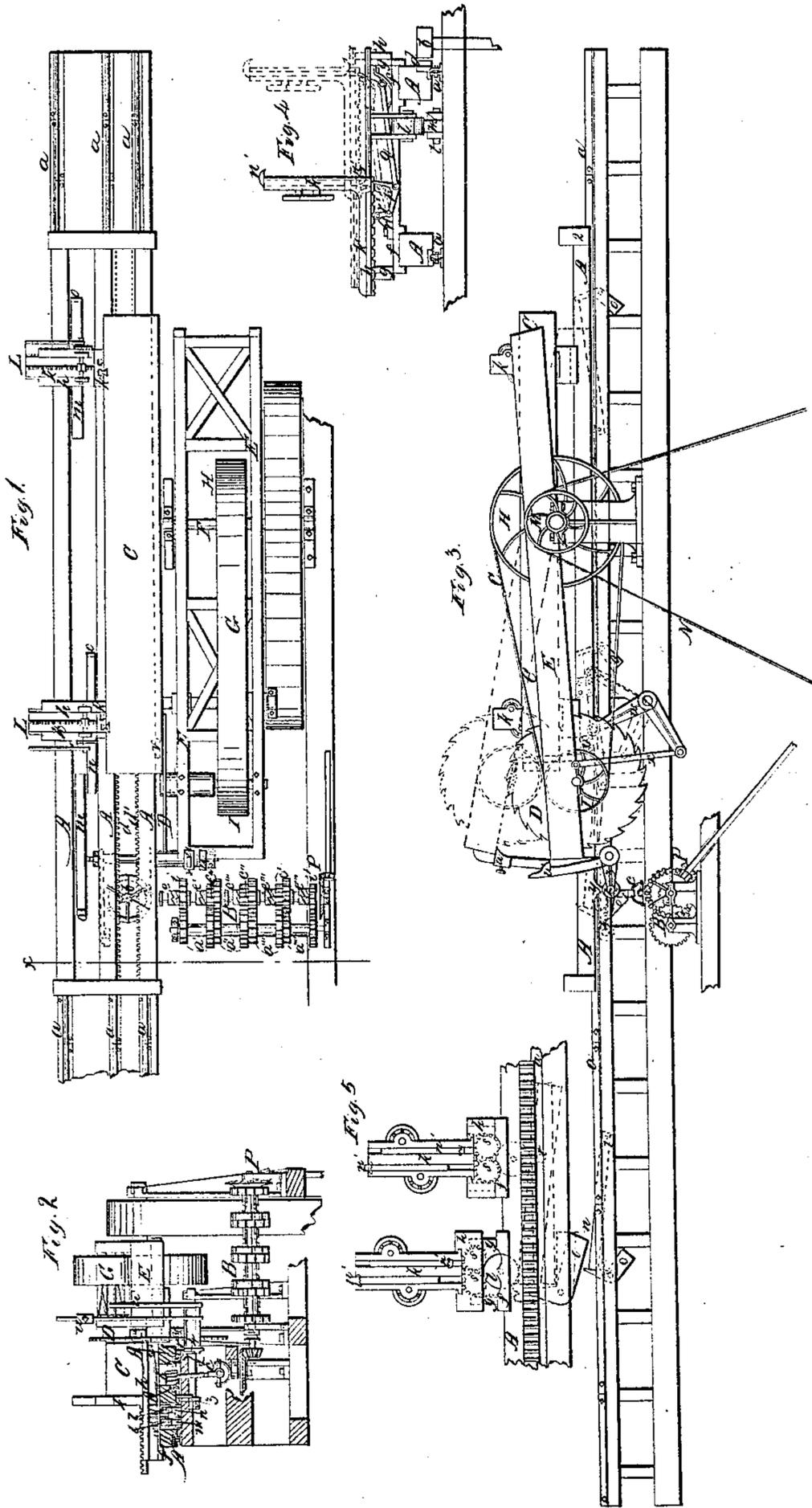


*D. S. Howard,*  
*Circular Saw Mill.*

*N<sup>o</sup> 13,573.*

*Patented Sep. 18, 1855.*



# UNITED STATES PATENT OFFICE.

DEAN S. HOWARD, OF LYONSDALE, NEW YORK.

## SAWING-MILL.

Specification of Letters Patent No. 13,573, dated September 18, 1855.

To all whom it may concern:

Be it known that I, DEAN S. HOWARD, of Lyonsdale, in the county of Lewis and State of New York, have invented certain new and useful Improvements in Sawmills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1, is a plan of the mill. Fig. 2, is a transverse section on the line  $x, x$  of Fig. 1. Fig. 3, is a front elevation. Fig. 4, is a side view of one of the setter blocks, on an enlarged scale. Fig. 5, is a face view of the same, in two positions on the inclined plane, same scale as Fig. 4.

The same letters of reference occurring in different figures, indicate corresponding parts.

My invention consists in the manner of setting the log forward any required distance, at either or both ends of the ways, by mechanical devices operated by the weight of the log; also in the method of hanging and operating the saw, so as to cut from either end of the log the same way of the grain, the axis of the saw being above the log when cutting from one end, and beneath it when cutting from the other.

In describing the construction and operation of my mill, I will refer to the drawing, in which—

(A) represents the carriage, which has a longitudinal motion on the rail, or ways ( $a$ ); this motion is communicated to it through the pinion ( $b$ ) on a vertical shaft, in which is a universal joint ( $c$ ) to allow of its being moved from side to side, to gear into the rack ( $d$ ) to propel the carriage in one direction, or into the rack ( $d'$ ) to propel it in the contrary direction.

(B) is a set of gearing, on two shafts, for varying the speed of the carriage, or amount of feed given to the saw; the wheels of which are united in pairs as ( $a' a'' a''' a''''$ ) and ( $e' e'' e''' e''''$ ) with two single wheels ( $i i'$ ), which are all free to revolve on their respective shafts, until secured by one of the clutches ( $e e' e'' e''' e''''$ ) which slide on leathers inserted in the shaft, and cause it to revolve at the speed of the wheel so clutched; the clutch ( $e''$ ) being represented in gear, all the others out of gear. On the carriage are attached two setter blocks (L), at suitable distance apart to support the log (C)

to be sawed. By referring to Figs. 4 and 5, the construction and operation of these setter blocks, will be more clearly seen.

( $f$ ) is the foundation secured to the carriage in any convenient manner, having four vertical racks ( $g$ ), one at each corner, over which the base frame ( $h$ ) slides; on the upper side of this frame ( $h$ ) is fitted the vertical piece ( $k$ ), whose base ( $k'$ ) has a sliding motion in a dovetail groove, transversely to the carriage, and is constructed with two vertical sliding dogs ( $n'$ ) projecting from its face, which may be moved up or down, by pinions gearing into racks on their edges, so that when the log (C) is laid upon the base frame ( $h$ ), these dogs secure it above and below; the underside of the frame ( $h$ ) has a friction roller ( $l$ ) attached to it, hanging downward between the ways ( $a$ ), in such position, that that, on one of the setter blocks shall pass over the inclined ways ( $m$ ), while that on the other comes in contact with and passes over the inclines ( $n$ ); these inclines are attached by bolts or pivots to the framing that supports the ways ( $a$ ) at one end, and rest on movable supports ( $o$ ) at the other, when elevated; they are so situated that the friction roller ( $l$ ) under each of the setter blocks, shall ascend their respective inclines, immediately after a board has been severed from the log, and during the passage of the end of the log by the saw, the distance of its diameter; thus elevating the setter blocks and with them the log to any given height, which may be regulated by the pitch of the incline; during its rise the elbow lever ( $p$ ) which is attached at its angle by a link or jointed rod ( $q$ ) to the under side of the frame ( $h$ ), and at one of its arms by a bracket ( $r$ ) and link ( $r'$ ) to the foundation ( $f$ ), changes its position and assumes that represented in red lines in Fig. 4, the vertical arm slipping one or more notches in the under side of the base ( $k'$ ) of the sliding vertical piece ( $k$ ), according to the height it is raised by the pitch of the inclined plane; when at the top of which, the roller ( $l$ ) comes in contact with the support ( $o$ ) and forces it back, liberating the top of the inclined plane allows it to drop, when the setter blocks by the weight of the log upon them, settle down to their original position, in doing which the elbow lever ( $p$ ) reassumes its former position, its vertical arm carrying forward the dogs, by being

locked in a notch further back in the under-  
 side of the base ( $h'$ ) than that occupied by  
 it before rising, and thus carries the log for-  
 ward the thickness of the board to be cut;  
 5 both of the setter blocks operating as above  
 simultaneously; two parallel shafts with  
 their axes in the ends of the frame ( $h$ ) and  
 a spur wheel ( $s$ ) on each end of each, gear-  
 ing into each other, and into the vertical  
 10 racks ( $g$ ) at each corner of the foundation  
 ( $f$ ), insure its rising and lowering level;  
 after the inclined planes are tripped the mo-  
 tion of the carriage is reversed, by throwing  
 the pinion ( $b$ ) out of gear with the rack  
 15 ( $d$ ) and into that marked ( $d'$ ), and as soon  
 as the setter block has returned past the  
 center ( $l$ ) on which the inclined plane is  
 hung, the inner end of said plane being  
 weighted; or borne down by a spring, raises  
 20 the other end onto the support ( $o$ ), ready  
 for a repetition of the same operation on  
 the return of the carriage; a similar ar-  
 rangement of the inclined planes is made  
 under each of the setter blocks, at each end  
 25 of their travel back and forth.

The circular saw ( $D$ ) is hung on its axis  
 in the frame ( $E$ ) which is balanced on  
 the countershaft ( $F$ ), the band ( $G$ ) pass-  
 ing around the pulley ( $H$ ) on the counter  
 30 shaft, and that ( $I$ ) on the saw spindle com-  
 municates the motion to the saw. The saw  
 is so hung that its position may be changed  
 from that shown in the drawing, to that  
 represented by dotted lines in Fig. 3, with-  
 35 out varying the tension of the belt, and is  
 retained in either of these positions by the  
 catches ( $u$   $u'$ ) on the elbow levers ( $3$ ,  $4$ )  
 locking it above or below; this change of  
 position, is effected during the time the  
 40 setter blocks are rising the inclined planes,  
 by a projection ( $v$ ) on the side of the car-  
 riage, coming in contact with the vertical  
 arm of the elbow lever ( $w$ ), (which has its  
 fulcrum on the frame work at ( $1$ ), its other  
 45 arm being connected by the link or rod ( $x$ )  
 to the vibrating frame ( $E$ ). The moment  
 the catch ( $u'$ ) has been withdrawn from  
 its hold on the frame, by the cam ( $y$ ) on  
 the carriage, passing over the friction roller  
 50 ( $x$ ) on the horizontal arm of the elbow  
 lever ( $3$ ), and thus depressing it; the car-

riage continuing forward, the projection  
 ( $v$ ) carries the vertical arm of the elbow  
 lever, and with it the vibrating frame ( $E$ )  
 to which its other arm is attached, into the 55  
 position represented by dotted lines, when  
 it is supported by the catch ( $u$ ) on the ver-  
 tical arm of the elbow lever ( $4$ ), until the  
 return of the carriage, when a similar cam  
 near the other end passes over a friction 60  
 roller on its horizontal arm, and removes  
 this catch, when the projection ( $2$ ) carries  
 the elbow lever ( $w$ ) and vibrating frame  
 ( $E$ ) back into their original position, in  
 readiness to resume its cut at the other end 65  
 of the log.

On the outer end of the shaft ( $E$ ) is a  
 pulley ( $M$ ) and belt ( $N$ ), through which  
 the saw is put in motion from the steam  
 engine, or other propelling machinery. The 70  
 feed gear may be operated by the shaft and  
 bevel gearing ( $P$ ) direct from the engine  
 shaft, or by band and pulleys as most con-  
 venient.

Having thus described my invention, 75  
 what I claim therein as new and desire to  
 secure by Letters Patent is

1. The method of setting the log forward,  
 after each board is severed, by mechanical  
 devices operated by the weight of the log, 80  
 substantially as specified.

2. The method herein described of cutting  
 from either end of the log, with a circular  
 saw, by hanging the saw in a vibrating  
 frame, or its equivalent, so that the axis of 85  
 the saw may be above the log when cutting  
 from one end, and beneath it when cutting  
 from the other end, so as to cut either way  
 against the grain of the wood.

3. I wish to be understood that I claim 90  
 the selfsetting arrangement herein de-  
 scribed, and claimed, whether in connection  
 with the circular saw, or the single or  
 double edged reciprocating saw, as equally  
 applicable to either. 95

In testimony whereof, I have hereunto  
 subscribed my name this 23d day of April  
 1855.

D. S. HOWARD.

Witnesses:

J. B. ROCKE,

WM. M. SMITH.