

October 25, 1913.

DRAWING

2,328

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Finis D. Morris,
Chief of Division E.

AWK

UNITED STATES PATENT OFFICE.

FREDERICK GOODELL AND THOS. W. HARVEY, OF NEW YORK, N. Y.

SELF-SETTING SAWMILL.

Specification of Letters Patent No. 2,328, dated November 3, 1841.

To all whom it may concern:

Be it known that we, FREDERICK GOODELL and THOMAS W. HARVEY, of the city, county, and State of New York, have invented a new and Improved Mode of Constructing Sawmills; and we do hereby declare that the following is a full and exact description, reference being had to the drawings annexed.

10 The nature of our invention consists in attaching the shackle bars or pitmen to the side of the saw frame, instead of the top or bottom girt of the said saw frame, in moving the log carriage, by the use of a worm gear, the same being driven by a cone or adjusting pulley, in a sliding clutch, to throw into gear, the machinery, which works the log carriage back and forward, and stops or starts the same, in the method of forming the cutting teeth of the saw, in the form of constructing the saw frame, and in the method of constructing the mill dogs, with the apparatus for adjusting the log, it being self-acting.

25 To enable others skilled in the art, to make and use our invention, we will proceed to describe the same.

To the ordinary plan of constructing the mill edifice, having the usual plates, beams and fender posts, we add, immediately over the saw, between the fender posts, a sufficient number of cross timbers and strong pieces, to place thereon the crank shaft placed upon plummer boxes for that purpose, and such other timbers as may be requisite for the application of the driving power, communicated by a belt upon the main pulley, on the crank shaft.

40 The drawings represent a mill constructed, having the fly wheel and running gear above the saw frame; the same may be placed below the saw frame, in situations where it may be most desirable, without varying the means in attaining it, or making material alterations in the general construction of the mill, other than the necessary inversion or change of order to effect the object.

50 A, A, A, A, A, Figure 1, are the proper timbers necessary in a new mill, built expressly to receive the running parts of our mode of constructing mills herein described, or in a mill altered to receive it.

B, Fig. 1, is the crank or main shaft placed in a horizontal line above the saw

frame, upon three plummer boxes, corresponding with the number of stringers, marked *a, a, a*, and resting upon the same,—the said plummer boxes may be friction roller boxes, or otherwise; we prefer a box with the rollers. 55 60

C, C, Fig. 1, are fly wheels, having counter balances to the weight of the saw frame, and having eyes cast in the arm opposite to the said counter balance, to receive the wrist or stud by which the crank is formed, and to which stud, the shackle bar or pitman is attached; D, D, Figs. 1 and 2, the main or driving pulley. 65

E, E, Figs. 1 and 2, is the cone or graduating pulleys. F, Fig. 2, are similar pulleys inverse to the former connected by the belt *c*, to which, if a single pair of cones are employed, in place of the set of graduating pulleys shown in the drawings, a belt shifter is affixed, and an index marked so as to show the increase or diminution of speed; G, G, Figs. 1 and 2, pinion wheel on the main shaft 3 to 1, of the wheel H, Figs. 1 and 2. Said wheel H is affixed to the shaft I, I, Figs. 1 and 2, upon which shaft is also affixed the bevel wheel J, J, Figs. 1 and 2, working into a similar wheel upon an upright shaft K, Fig. 1, upon which last named shaft is a cog wheel L, Fig. 1, working into the rack gear upon the log carriage; by the said bevel gear the same is carried back, and serves the purpose of the "gig" in old mills. Upon the said upright shaft K, is the wheel M, of the worm gear O, Fig. 2, which wheel is made to turn freely upon said shaft as does also the bevel wheel upon the same, and are locked into motion, or suspended, by the clutches N, N, Fig. 2, as hereafter fully explained. O, Fig. 2, is the worm gear working into the said wheel M. 70 75 80 85 90 95

P, Fig. 2, is an upright rod connected with the clutch lever, of clutches N, N, and is made to reach down, sliding in guide boxes, or sockets, affixed to the frame-work of the mill, for that purpose. The sliding rod P, is furnished with a friction roller V', V', Figs. 2 and 3, at its lower end, in order to meet a projecting cant X, Fig. 3, secured to the tail-end of the log-carriage, by which the clutch is unlocked,—the progress of said carriage is arrested when the saw has completed its cut, the said cant being adjusted for that purpose; a similar cant *y'* Fig. 3, 100 105

at the head end of the carriage is brought in contact in the top of said roller and arrests the return motion of the same.

Q, Fig. 1, is the saw-frame, having plates of steel, or other metal (and may be used without either) on the outside of the sides of the saw-frame, sliding in four stands or guides R, R, R, and a similar one, not seen in the drawing, being hid by the representation of the log. The said guides R, R, are made to adjust, being fastened upon the fender posts S, S, Fig. 1, and the faces R' of these adjustable guides being grooved to receive the steel plates, on the outer edges of the saw-frame. The stands or guides R, R, have screw bolts passing through slots in them, and through the fender posts, and are adjusted by the screw nuts x, x , as shown in the drawing.

T, Fig. 1, is the saw which may be constructed in any ordinary mode; but we prefer a saw having two fleam shaped teeth, set the width of the cut in opposite inclinations, from each other, and being filed to a cutting edge, outward from the center of the saw, and the next tooth to be without set, cutting out the central portion of the cut of the timber. This tooth may be in the usual form, or it may be rendered somewhat hooked, to give a thinner cutting edge—the said saw being hung in stirrups of approved construction.

The log is to be fed to the saw by a continuous, instead of by an intermitting motion, and it has increased rake forward to allow of this being done, without its being obstructed in its change, from the down, to the up stroke. The pitmen (one on each side of the saw frame) are connected to the same by gooseneck fastenings, being secured by screw bolts to the frame.

The carriage and head-blocks may be constructed according to any common, or new and improved form, and any form of dogs may be used, suited to the purpose. The manner of moving the log on the carriage, to set for a board, is represented at Fig. 3, in which a', a' , are the dogs, being constructed, by having in each, two upright pieces of metal, pierced with holes to receive the dogging bars z', z', z', z' , the same being made fast by the screw a'', a'' ; the two upright parts of the dog are connected by a cross-bar p' , through which the screw b, b , works; these dogs slide upon way pieces q', q', q', q' , for that purpose, upon the head blocks. The said screws turn upon journals on stands r', r' , placed at each end of the head blocks; if these screws are turned it is manifest that the log will be thereby set, and that, to a distance proportioned to their revolution.

The apparatus by which the setting is effected is described as follows: upon one end of each of the screws, is placed a ratchet

pulley d' , which turns upon the shaft of the screw, and carries a pawl d^2 ; said pawl takes into the ratchet wheel d^3 in a manner well understood. Around those pulleys passes a cord, chain or band e' the ends of which are attached at f'', f'' , to a sliding bar f' , said sliding bar being situated on the top of one side of the carriage. A stand g' is fastened to the floor of the mill, by means of a set screw g'' , there being a slot in the stand, for the purpose of adjusting it, so as to graduate the setting of the log. Through sockets in the heads of the stand g' , there passes a sliding rod h' , from one end of which projects the offset w' . A catch $m' m''$ works on a fulcrum pin on the side of the carriage and is borne down at its end m^3 , by a spring m^4 ; a weight i' attached to a cord passing over a pulley j' serves to draw the rod h' back, when its action is not counteracted, and brings the offset w' up to the head of the stand g' , as represented in the drawing. In the operation of giggering back the carriage, the end m'' of the catch m' , is brought into contact with the inside of the offset w' , on the bar h' , carrying said bar back, and raising the weight i' ; and this it continues to do, until the end of m^3 of the catch, is brought into contact with the cant or lifter n' , on the stand g' , and this is so adjusted as to disengage the rod h' at the instant the saw has entered the head-block, and is entirely free from the log. The end w' of the rod h' , as it is drawn back, engages with the projecting piece l' , attached to the slide f' and turning the ratchet pulleys $d' d'$, sets the log at each end, and that to an extent regulated at pleasure, by the adjusting of the stand g' . It is requisite, after this to bring the slide f' back to its former position preparatory to the resetting of the log, on the completion of the next cut, and this is effected in the following manner: Upon the reverse motion of the carriage, an arm or projection t' upon the end of the slide f' , is taken hold of by the catch, or spring catch o' the stand of which is affixed to the floor, and this draws the slide f' back, until the end o^2 of said catch is brought into contact with the stud u' , attached to the carriage, which disengages the catch from the projecting piece t' , and the slide f' is liberated from its action. The stud u' is made adjustable, as shown in the drawing, so that it may be set to act at the required moment.

Fig. 4, represents the saw-frame. a'', a'' , a'', a'' , are truss braces; b'', b'' are wedges upon which the stirrup is placed; c'', c'' , the cross-heads, d'', d'' , stiles or sides of saw frame. The effect of the truss braces, will be to strain endwise upon the cross-head, when straining the saw, by which, a much lighter saw-frame may be used.

To put this mill in operation the clutch

lever *r*, Fig. 2, is put down, when the worm wheel *M*, is clutched, which otherwise runs loose upon its bearings, and is worked by the screw gear *O*, which is driven by the cone pulleys on the main shaft. All being ready and the driving power in motion a tightening pulley is dropped upon the main belt *S'*, *S'*, Figs. 1 and 2, when motion is given to the saw by the pitmen *b*, and to the log-carriage, by the upright shaft *K*, working the pinion *L*, in the rack gear upon the carriage. At the lower end of the rod *P*, Fig. 2, is a roller *v'*, which strikes a cant *x'* at the termination of the cut of the board, lifting up the same, and sliding the clutch out of gear from worm wheel *M*, and lifting it up, so as to slide the clutch *N* into the bevel gear, at the head of the upright shaft *K*, which otherwise turns freely upon its bearings, when the log-carriage is rapidly run back, until the roller *v'* at the lower end of rod *P* is forced down by a cant *y'* striking the upper part of said roller, and the motion of the carriage is suspended by thus sliding out of gear, the clutch, when the setting of the log is effected, as above described. A cord from the weight *i'*, Fig. 3, to the clutch lever *r*, Fig. 2, may be made to bring down the clutch, and the operation is repeated, or otherwise the operator performs the same, as before described. And we hereby declare our intention to work the several parts collectively or separately; for example, we may in some cases work the mill, without the self-acting apparatus, and use dogs of usual form; or we may prefer, for some timber, the common saw, to the one described. We also may prefer to drive the gig shaft *I*, by a belt direct from the power drum, and throw out the pinion *G*, and the

wheel *H*, and as before suggested, may prefer to place the whole gearing, beneath the saw frame instead of above it.

What we claim as new and desire to secure by Letters Patent is:

1. The particular manner in which we have arranged the working gear, as represented on the upper part of the mill-frame, for running the carriage back and forth; by which arrangement we combine the method of reversing the motion of the carriage, by the rod *P* operating upon the clutches by the action of its lower end on the cants *x'* and *y'* on the log-carriage, as set forth; and the method of regulating the feed, by means of the cone or graduating pulleys, as described.

2. The manner of arranging the apparatus, for setting the log, as set forth; said apparatus consisting of the sliding bar, the ratchet pulleys *d'*, *d'*, attached to the setting screws, *b'*, *b'*, the slide bar *h'*, the stand *g'* and their immediate appendages, coöperating in the manner described.

3. The manner of trussing the saw frame, by means of the truss braces *a''*, *a''*, the wedges *b''*, *b''*, and the action of the stirrups on them in straining the saw.

4. We claim the feeding of the stuff to the saw by means of a continuous motion, in combination with a reciprocating saw, having sufficient rake to clear itself in rising, so as to admit of such continuous motion of the carriage, as set forth.

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Witnesses:

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AMOS P. HAWLEY.