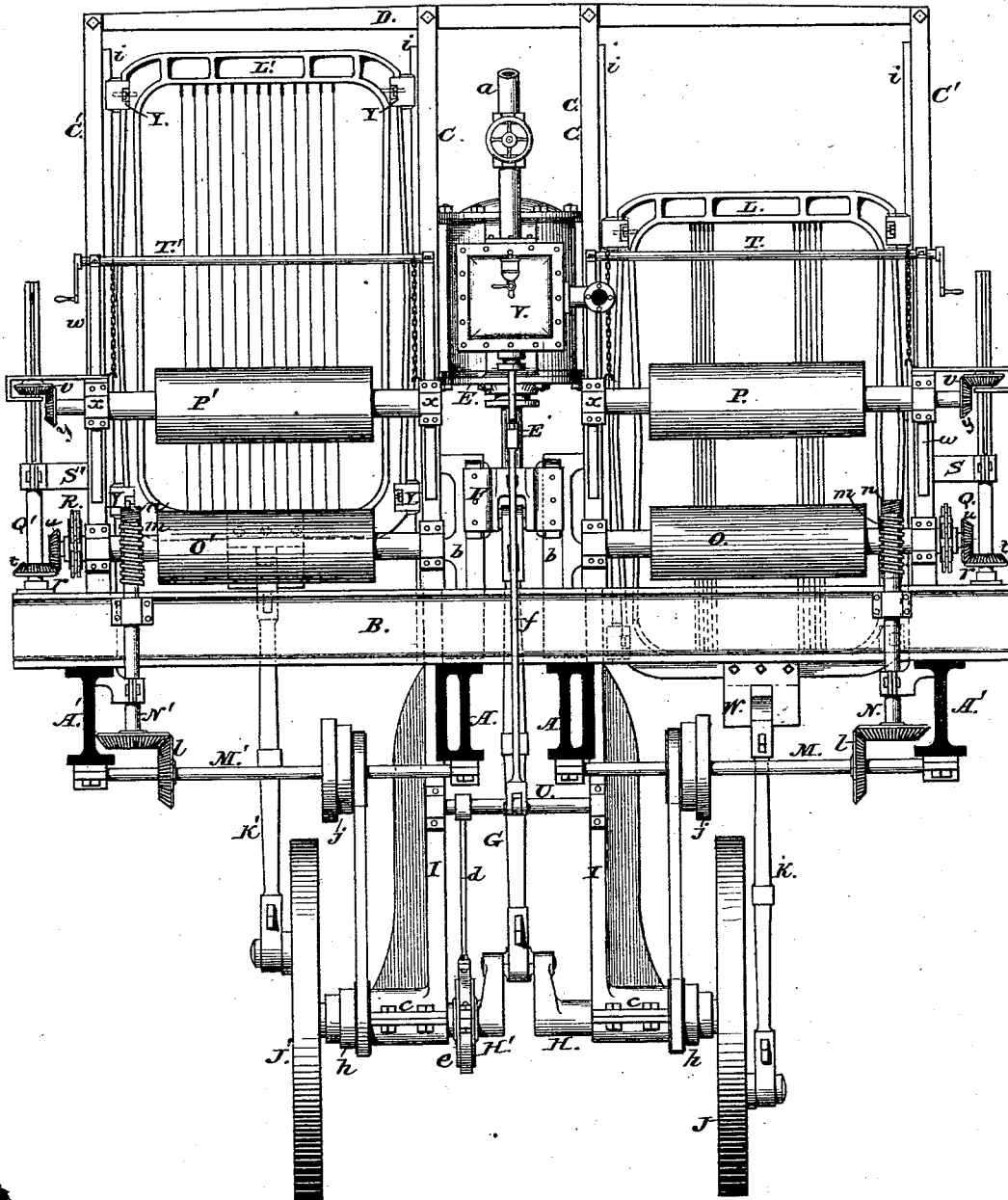


F. E. TOWN.  
Gang-Saw Mill.

No. 161,299.

Patented March 23, 1875.

Fig. 1.



Attest:

*W. P. Crossman*  
*James H. Reeling*

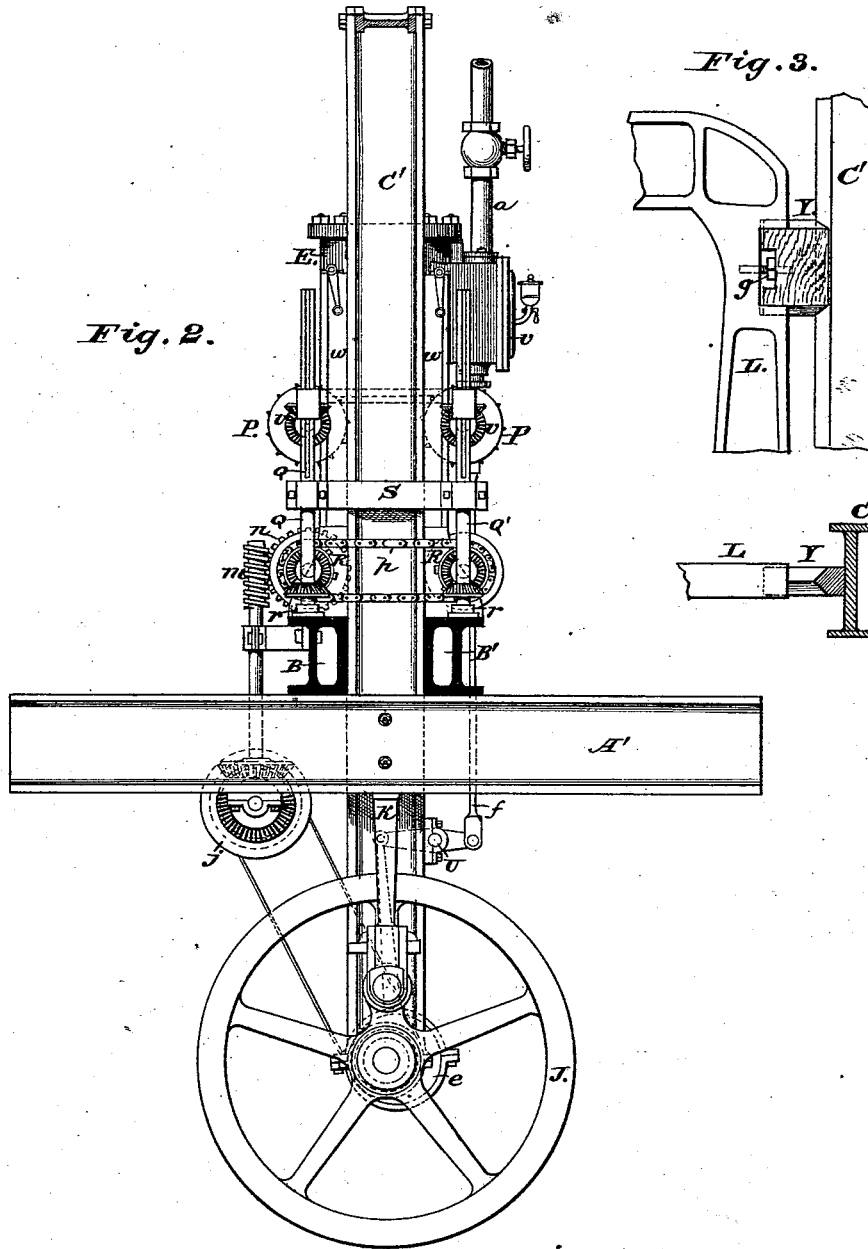
Inventor.

*Franklin E. Town*  
*by M. M. Spaight*

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*Attest:*  
W. D. Crossman  
James K. Perkins

*Inventor:*  
Franklin E. Town  
by M. M. Haight

# UNITED STATES PATENT OFFICE.

FRANKLIN E. TOWN, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN GANG-SAW MILLS.

Specification forming part of Letters Patent No. **161,299**, dated March 23, 1875; application filed March 1, 1875.

*To all whom it may concern:*

Be it known that I, FRANKLIN E. TOWN, of the city of Boston, county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Gang-Saw Mills; and I do hereby declare the following to be such a full, clear, and exact description thereof as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings forming part of this specification, and to the letters of reference marked thereon, similar letters indicating corresponding parts in the different figures.

This invention relates to that class of gang-saw mills in which the motive power is steam, and the saw-frames receive their reciprocating movement directly from the steam-engine without the intervention of belts, frictional or cog gearing, the object being to produce a gang-saw mill which shall occupy a comparatively small space, be easily taken to pieces, removed to another location, and set up ready for action in a short time, thus supplying a much-needed desideratum of the western and southern portions of the United States, where there are many tracts of fine timber land too small to warrant the expense of erecting thereon the costly gang-mills now in use, and yet possessing timber of such fine quality as to involve a great waste if manufactured into lumber by means of the ordinary portable circular or muley mill; it being an established fact that such mills, being forced to use thicker saws, in order to secure the requisite stiffness to carry them through the cut, reduce a large proportion of the timber to sawdust, amounting in the cutting of some varieties of lumber to a loss of fully one-third of the material, and a still further loss is occasioned by the imperfect setting mechanism of such mills, which cause the boards to vary in thickness, even when the greatest care is used in operating the setting mechanism, thus forming a source of loss when the lumber passes through the hands of the inspector preparatory to being placed upon the market for sale. Furthermore, it is a well-known fact that gang-sawed lumber commands a more ready sale, even when the quality is the same, as its even thickness and comparatively smooth surface

render it much easier to work either upon the planing-machine or by hand; and the invention consists in the combination and arrangement of the different parts, as will be hereinafter fully set forth, and then pointed out in the claims.

In the accompanying drawings, Figure 1 represents a front view of the mechanism, showing the relative positions of the different parts, Fig. 2 being a side view, exhibiting the arrangement of the feed mechanism and other details; and Fig. 3 gives enlarged views of a corner of one of the saw-frames, showing the method of attaching and adjusting the slide-blocks.

The framing which carries the operating mechanism of the mill is composed of the metallic beams A A and A' A'. These may rest upon bed-timbers placed over a pit, in which the fly-wheels and lower parts of the machinery are placed, so as to bring the log-carrying rolls nearly upon a level with the surface of the surrounding ground; or, if it is desired to elevate the mill in order to facilitate the removal of lumber and refuse, or for any other purpose, they may be placed upon trestle-work, or any other foundation having the requisites necessary for sustaining steadily the superincumbent mechanism when in operation. Crossing the above-named beams transversely are the bearers or fender-beams B B', placed at such a distance from each other as to allow of the free passage of the saw frames or sashes in their reciprocation, and embracing the vertical posts C C and C' C', which are all connected at the top by the beam D, and to which they are securely bolted, thus forming a frame of great rigidity and strength. Between the posts C C, and securely bolted thereto, is placed the vertical steam-cylinder E, receiving steam through the pipe *a* from suitable boilers placed in any convenient location about the mill. Projecting downward from the steam-cylinder is a piston-rod, E', carrying upon its lower end the cross-head F, which is guided in its reciprocating movements by the slides *b*, which are secured to the posts C. A connection is made between the cross-head and the crank-shafts H H' by means of the connecting-rod G. These crank-shafts are carried in journal-boxes *c*, placed at

the lower ends of the depending brackets I, which are secured to the beams A; or they may form a part or extension downward of the posts C, the latter method of construction being preferred, as securing additional stiffness without increase of weight. An eccentric, *e*, is secured to the shaft H', and is connected by the rod *d* to an arm of the rock-shaft U; and this shaft, through the agency of an arm projecting in an opposite direction and the valve-rod *f*, communicates motion to the slide-valve in the steam-chest V upon the steam-cylinder E, thus forming the parts necessary to give motion, upon the admission of steam, to the machinery; but this mechanism may be varied in construction to suit the wishes of the builder, or any peculiar circumstances which may arise, without departing from the spirit of my invention. Upon the outer ends of the shafts H H' are secured two fly-wheels, J J', each of them provided with a crank-pin, so set that when one of them is at the top the other shall be at the bottom of its stroke; and connected to these crank-pins, by means of the pitman K K', are the saw-frames L and L'.

It will thus be observed that one saw-frame balances the other, relieving the engine from unequal strains, and causing the machine to run smoothly and without jar.

These frames are preferably cast in a single piece of metal, having an outer and inner band, connected by a strong web; but they may be of wrought-iron, if desired. Near the middle of the lower girts is attached, by means of bolts, the noddle-pin blocks W. Near the top and bottom, and upon each side of the frames, are recesses having grooved sides, into which are inserted the adjustable sliding blocks Y. These blocks are each provided with an adjusting-screw, *g*, and have a V-shaped groove formed in their outer edge, which embraces the angular sides of the slides *i* upon the posts C C'.

It will be apparent that, by means of these slide-blocks and their adjusting-screws, the position of the saw-frames may be readily changed, or the blocks set out to compensate for wear, thus insuring their reciprocation in a truly vertical line.

In order to feed the lumber to the saws a system of feed-rolls is employed, which operate as follows: Secured upon the shafts H H' are two cone-pulleys, *h h*, connected by belts with corresponding cone-pulleys *j j* upon the shafts M M', which revolve in journal-boxes secured to the bottom of the beams A A'. These shafts are provided with bevel-gears *l l*, which engage with a similar set of gears upon the lower ends of the vertical shafts N N', upon the upper end of which are formed the screws *m m*. These screws engage with the worm-wheels *n n* upon the shafts of the lower feeding-rolls O and O', and from which motion is communicated to a corresponding set of rolls upon the opposite side of the saw-frames by means of the sprocket-

wheels R and pitch-chains *p*. Four vertical shafts, Q Q and Q' Q', are stepped in the bearing-blocks *r*, resting upon the fender-beams, being further sustained by journal-boxes upon the supports S and S', which are secured to the vertical posts C' of the main frame. These shafts receive motion through the bevel-gears *t* upon their lower ends and the gears *u* upon the outer ends of the lower set of feed-rolls. The upper portions of these shafts Q and Q' carry the bevel-gear wheels *v*, which are constructed to slide up and down upon them, and at the same time revolve with them, through the agency of feather-keys, moving in splints in the shafts. The upper pressure and feeding rolls P and P' receive their motion from the bevel-gears *v* through the gears *y* upon the outer end of each roll, and revolve in the sliding journal-boxes *x*, which move vertically upon the guides *w*, the guides themselves being secured to the sides of the vertical posts C and C', and carrying the horizontal cranked shafts T and T', by means of which the pressure-rolls are raised and lowered through the agency of a pair of chains attached to the sliding boxes X at the end of each roll, and to the opposite ends of the shafts, it being apparent that by revolving the cranked shafts the chains will wind upon them, thus raising either of the rolls at the will of the operator, and when raised they may be retained in that position by means of a pawl acting upon a ratchet-wheel placed upon the shafts T T', or other suitable mechanism.

Although I have shown and described mechanism for driving the pressure-rolls, thereby causing them to act as feed-rolls, I do not wish to be understood as considering it imperative to do so, for I am aware that in many cases this gearing may be dispensed with and the rolls be turned by their friction upon the log.

It is generally found desirable to furnish the feed-rolls acting in connection with the saw-frame L, which is used for the purpose of slabbing or producing a flat surface upon two sides of the log, with short spikes, which penetrate the bark, enabling them to obtain a firmer hold than they otherwise would of the log, and prevent it from rolling while under the action of the saws; the feed-rolls opposite the saw-frame L' being designed for feeding the log after slabbing, and, as they act upon its flattened surfaces, do not require the aid of spikes, but may be perfectly smooth upon their surfaces, or provided with longitudinal flutings, if desired, which enable them to take a firm hold of the log without detriment to the lumber cut from it.

For the purpose of driving lath-mills, edgers, sawdust-carriers, and the various other machines which are sometimes used in connection with the mill, a pulley may be placed upon the shaft H, occupying a position corresponding to that of the eccentric *e* upon the shaft H', and from which, by means of suitable belts and other connections, they may be driven.

It will thus be seen that my invention enables the manufacturer of lumber to have at his command a mill capable of doing the best work, and which may, if desired, be removed from place to place without incurring great expense.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. A gang-saw mill having its various parts constructed, combined, and arranged substantially as herein shown and described.

2. The frame composed of beams A and A', the fender-beams B B', vertical posts C C', provided with guides *i* and lugs, to which is bolted the steam-cylinder E and the connecting-cap D', the parts being united and arranged as and for the purpose set forth.

3. The mechanism herein described for feeding logs to the saw, consisting of a pair of cone-pulleys, or their equivalents, connecting shafting and gear, and rotating screw-gearing, with a worm-wheel upon the roll-shaft, as specified.

4. The feeding-rolls O O' and the worm-gear for driving the same, in combination with the sprocket-wheels R and pitch-chain *p*, substantially as and for the purpose specified.

5. The slide-blocks Y, constructed as shown and described, and provided with the adjusting-screw *g*, in combination with the recessed saw-frames, as set forth.

6. The suspending-brackets I, provided with the journal-boxes *c*, in combination with the beams A A' and crank-shaft H H', as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto affixed my signature in the presence of two witnesses this 29th day of January, 1875.

FRANKLIN E. TOWN.

Witnesses:

J. B. LUDWICK,  
C. E. MCKEAN.