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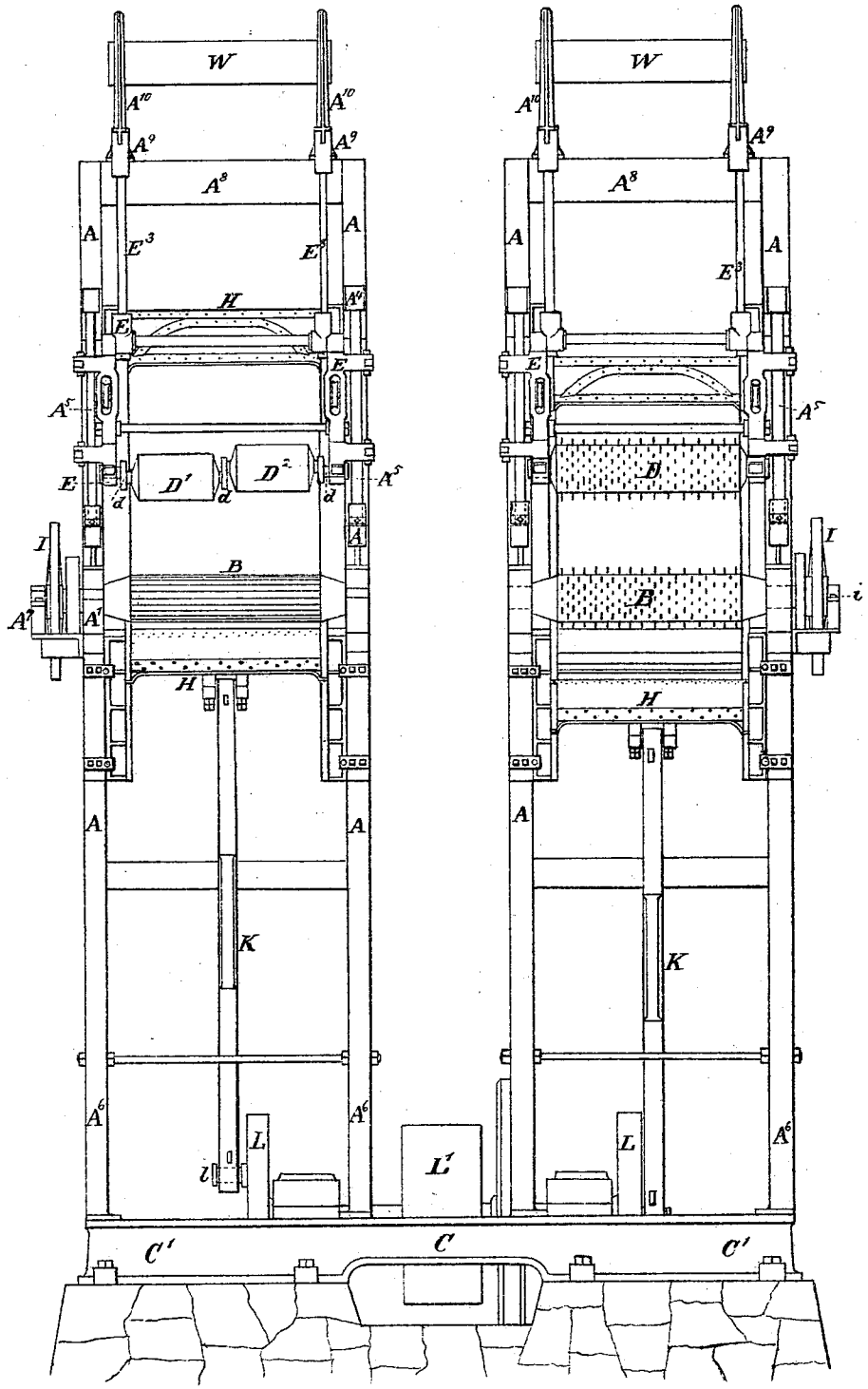
H. F. SNYDER & S. WEYMOUTH.

Improvement in Saw Mills.

No. 123,586. **Fig. 1.** Patented Feb. 13, 1872.



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H. F. SNYDER & S. WEYMOUTH.

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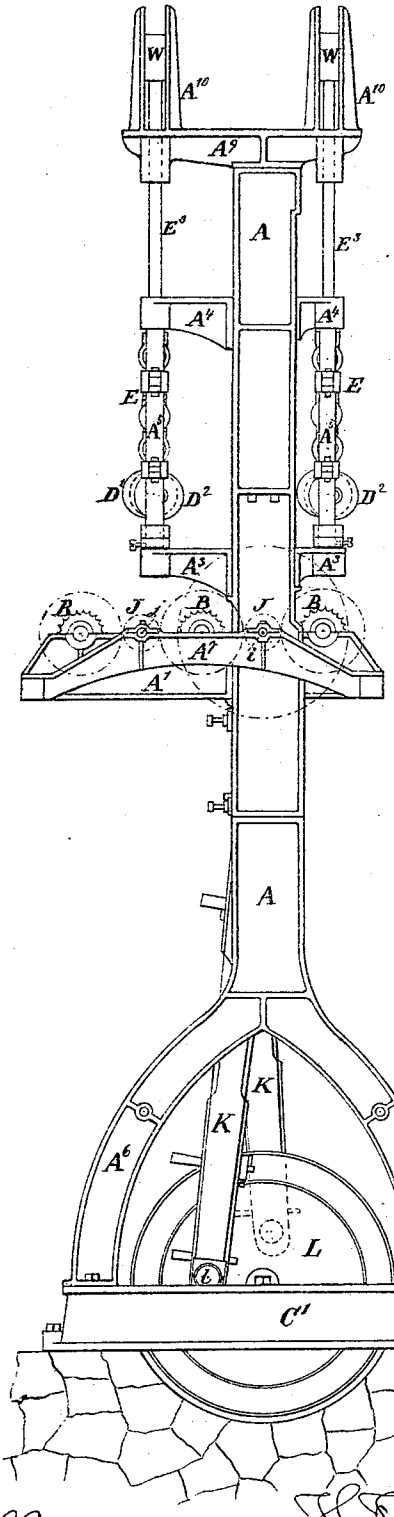
Fig. 2.



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H. F. SNYDER & S. WEYMOUTH.

Improvement in Saw Mills.

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Fig. 3,

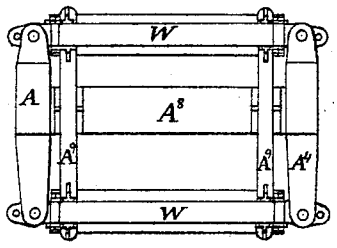


Fig. 4,

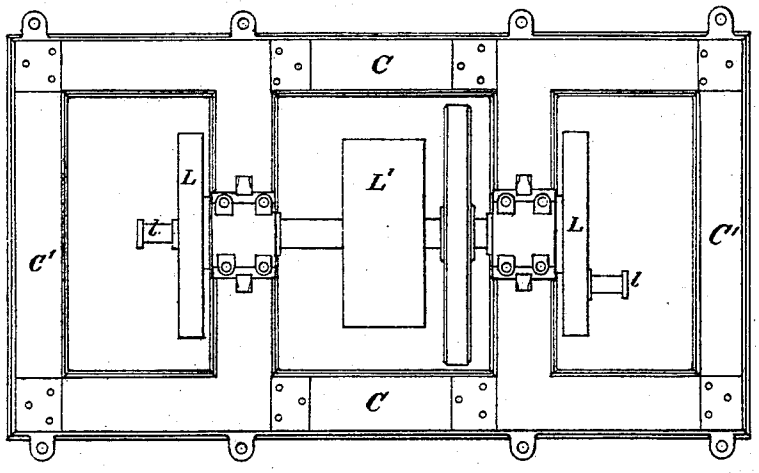
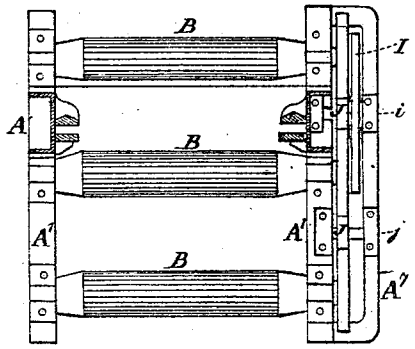


Fig. 5,



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN SAW-MILLS.

Specification forming part of Letters Patent No. 123,586, dated February 13, 1872.

To all whom it may concern:

Be it known that we, HENRY F. SNYDER and SAMUEL WEYMOUTH, both of Williamsport, in the county of Lycoming, State of Pennsylvania, have invented certain new and useful Improvements in Saw-Mills, of which the following is a specification:

The invention relates to the construction of the framing, to provisions for loading the binder-frames with extra weights for large logs, and to provisions for preventing the fracture of the framing or other parts in case of accident. It may be used with single saws or with gangs.

The accompanying drawing forms a part of this specification. Figure 1 is a front view, and Fig. 2 a side elevation of the entire mill. Fig. 3 is a plan view of the work at the top. Fig. 4 is a plan view of the bed-plate, and Fig. 5 is a plan view of the feed-rolls.

Similar letters of reference indicate like parts in all the figures.

A A are the main frames, formed of cast-iron in sections, truly faced, and firmly bolted together. We will describe them as each constituting a single piece. The lower end of each is forked and spreads apart, the parts A^6 A^6 forming a Gothic arch, as plainly seen in Fig. 2. These branches are bolted upon a bed-plate, C C′ C′, cast in one piece, and extending out around or past the cranks, as shown. There are three feed-rolls, B, mounted in bearings in the rigid branches A^1 A^1, cast with or rigidly bolted on the frames A in the positions represented. These are driven by overhung gear-wheels, shown in dotted lines in Fig. 2, the gears being driven by a belt or other suitable connection from the driving-power by means of gear-wheels J J fixed on shafts *i i* and *j*, mounted as shown, and receiving motion through the large gear-wheel I, with other gear, not represented. One end of each shaft *i* and *j* is supported in the main casting A and in the adjacent branch A^1. The other end of each is carried in a side frame, A^7, firmly bolted on the sides of A and A^1 in the position shown. The saws may be of the ordinary or any suitable construction. We will assume that there is a gang mounted in the ordinary manner in the gate H, and reciprocated vertically by the pitman K driven by the crank-pin *l* carried in the crank-wheel L, rotated by means of a belt on the pulley L′ keyed on the same shaft. The guides and analogous provisions for properly operating the saws may be of the ordinary character. Our mill is of sufficient width to saw two ordinary logs at once. It is intended that each shall be slabbed or flattened on the upper and lower faces about equally; but in practice they are liable to vary in height, and in such case the ordinary binder-roll would press only on the highest one, leaving the other with a little play. To avoid this evil the binder-roll is made in two distinct sections or pieces, marked D^1 D^2, and these pieces are mounted on a cranked shaft, *d*, as clearly shown in Fig. 1. Each section D^1 D^2 is free to turn loosely on the shaft *d*, and, the end bearings of the latter being mounted in proper bearings in the supporting-frame, the cranked shaft *d* does not revolve, but oscillates or tilts in its bearings to allow the one section, D^1, or the other section, D^2, to rise higher than its mate to compensate for the inequalities in the heights of the upper surfaces of the logs. The bearings of the shaft *d* are supported in frames E, which are allowed to rise and sink on cylindrical vertical rods A^5 supported in rigid arms A^3 A^4, which extend out from the main frames A. The only further novelties in the binder-frames to which we attach importance in connection with our invention lie in the work at the top. The two vertical rods E^3 E^3 extend up from each binder-frame E. The tops of the frames A A are stiffly connected by a cross-beam, A^8, on which are mounted transverse castings A^9, with upright guides A^{10} A^{10} A^{10} A^{10}, in the positions represented. These guides support heavy cross-weights, W, so that these cross-weights are free to rise and sink therein, and the rods E^3, which are socketed in the binder-frames E, stand loosely inclosed or guided in holes in the transverse casting A^9. When the binder-frames E are in or near their lowest positions, the weights W are of no effect; but when the binder-frames are raised considerably, the ends of the rods E^3 strike the under side of the weights W and lift them.

It follows, from this construction and arrangement, that the weights W serve to load the bind-

er-frames, and consequently to press down the binder-rolls with more force when the binder-rolls are in an elevated position than when they are in a lower position. This gives an important advantage in holding down or binding large logs with more force than small ones. The parts are so proportioned that up to a thickness of fifteen inches, or some other size which may be esteemed preferable, the weights W are of no effect, and the logs are held down simply by the weights of the binder-rolls D^1 D^2 and the binder-frame proper; but whenever a larger log is sawed, and the binder-rolls are held at a higher elevation, the gravity of the weights W is added to that of the binder-rolls and frames.

The casting A^9 is extended down around the rods E^3, as shown, and the hole in the casting is of the size of the rod E^3, or only a little larger. We can vary the period at which the weights W begin to be effective in increasing the load on the binder-rolls by blocking up under the weights W. When the latter are allowed to sink to the extreme bottom of the vertical guides A^{10}, they will commence to be lifted when the thickness of the log exceeds ten inches, for example. If it is desired that they shall only be effective when the thickness exceeds fifteen inches, it is simply necessary to block up the weights W to a height of five inches, so that the rods E^3 may rise that much higher before they strike the lower faces of the weights W and commence to lift them. We extend the bed-plate C C′ C′ past the cranks at each side, and join the extensions so as to inclose the cranks by the parts C′ C′, and thereby secure such a leverage to hold the bed-plate by the foundation-bolts that there is no twisting or working in the most rapid motion. We provide a crank-wheel, L, and crank-pin *l* at each end instead of one end of the shaft which carries driving-pulley L′. There being a corresponding double set of connecting-rods, gates, guides, binder-rolls, feed mechanism, weights, &c., the double mill thus produced is capable of not only doing work with less than double the ordinary amount of mechanism, but we are able to balance the frames by setting the cranks at right angles to each other. In ordinary practice, one gate in our double mill will carry gang-saws for final sawing, and the other gate will carry only the side saws for slabbing. The logs, having been first treated in the slabbing side of the mill, are turned down and slid easily across on suitable ways, and mounted with very little labor on the other side of the mill and reduced to boards.

Some of the advantages due to certain features of the invention may be separately enumerated as follows: First, by reason of the side frames A^7, mounted in the positions represented relatively to the main frames A and arms A^1 A^1, we support the shafts *i* and *j* of the feed mechanism with great facility for construction, removal, and repairs. Second, by reason of the weights W, arranged and guided as represented, we induce a greater pressure on the large logs than on the small approximately proportionate to the difference in the difficulty of holding them. Third, by reason of the fact that the binding-rolls D^1 D^2, mounted on a cranked shaft, *d*, and adapted to tilt and bear equally on the surfaces of logs of different heights, as represented, are carried in a frame, E, with provisions, W, for loading it more heavily as the sizes of the logs are increased, we are able to employ very heavy and efficient binding means, and to operate them with great facility, and with little necessity for judgment or skill, under all conditions.

We claim as our invention—

1. The removable side frame A^7, in combination with and arranged to serve, as described, relatively to the framing A^1 A^1 and feed-gear shafts *i* and *j* of the saw-mill, as represented.

2. The weights W, mounted as represented, and serving to increase the load on the binder-rolls when the logs exceed a certain size.

3. The framings E and their inclosed sectional binding-rolls D^1 D^2, mounted on the tilting shaft or frame *d*, and operated as represented, in combination with the guides A^5 A^5 and with means, W, for increasing the load on the binding-rolls when treating large logs, all substantially as herein specified.

In testimony whereof we have hereunto set our names in presence of two subscribing witnesses.

HENRY F. SNYDER.
SAML. WEYMOUTH.

Witnesses:
J. D. SNYDER,
T. C. ROGERS.