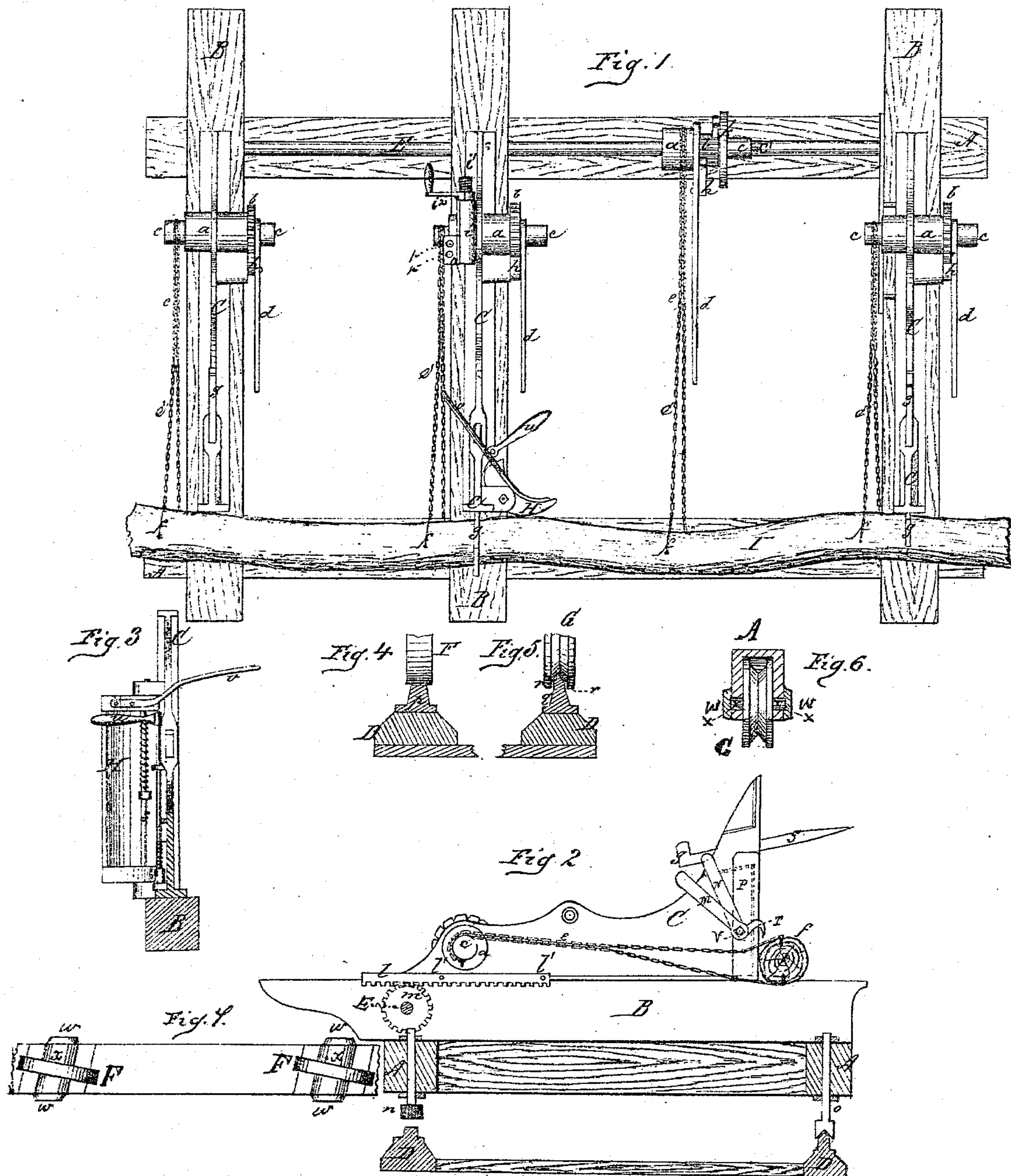


EDWARD H. STEARNS.

Improvement in Saw-Mills.

No. 115,903.

Patented June 13, 1871.



Witnesses.
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UNITED STATES PATENT OFFICE.

EDWARD H. STEARNS, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN SAW-MILLS.

Specification forming part of Letters Patent No. 115,903, dated June 13, 1871.

I, EDWARD H. STEARNS, of Erie, in the county of Erie, in the State of Pennsylvania, have invented certain Improvements in Saw-Carriages for Saw-Mills, of which the following is a specification:

Nature and Objects of the Invention.

The first part of my invention relates to the construction of the wheels upon the near or saw side of the carriage with grooves of a peculiar form in their peripheries, and the rail upon which they roll with a corresponding convex form, and, in combination with such formations, furnishing the journals of the axles of the wheels with end bearings, and giving such axles oblique directions to the sides of the carriage. The grooves and rail of peculiar form serve to prevent the carriage from being thrown off the track by the lateral pressure, herein-after mentioned; the end bearings prevent loss of power from friction and wear upon the grooves and the corresponding formations on the top of the rail; and the oblique directions of the axles cause the carriage to press toward the saw when the log is being fed thereto, and to press from the saw when gigging back. The second part of my invention relates to a peculiar way of mounting and operating automatic scrapers, by means of which the rails of the carriage are kept clean and free from sawdust, bark, and other trash. The third part of my invention relates to the mounting and operation of windlasses, some upon a spring-shaft and others upon the sliding knees of the carriage, in such a manner that a crooked log may be bent straight and held so while being sawed into boards and planks, and cants and logs can be held from springing. The fourth part of my invention relates to the construction and operation of a gib-headed dog, in connection with a standard of the carriage, in such a manner as to prevent the bottom of a half-round log from slipping outwardly, while being sawed into planks without squaring or facing, as such a log has a tendency to do. The fifth part of my invention relates to the construction of a lever, which will act as a lock to a hand-dog to prevent the same from jarring loose during the operation of sawing.

Description of the Accompanying Drawing.

Figure 1 shows a plan view of a set of head-blocks embracing my improvements, Fig. 2

an end view, and Fig. 3 a rear view of the cam or wing. Fig. 4 shows an end view of the flat-topped rail and a cross-sectional view of one of the off-wheels which roll upon it. Fig. 5 shows an end view of the front or near rail and an elevation of the edge of one of the near wheels which roll upon the same. Fig. 6 shows a vertical sectional view of a near wheel, G, with its journal and end bearings. Fig. 7 shows a bottom view of off-wheels F F, displaying the end bearings, before mentioned, and their obliquely-arranged axles.

General Description.

For the peculiar form of the grooves in the peripheries of the near wheels reference is made to Fig. 6 in the drawing. To a certain distance toward the center of the wheel the sides of the grooves are perpendicular to the ground and parallel to each other, and thence they converge and meet and make the form of a V, and the top of the near rail has an exactly-corresponding formation, as shown. Now, in ordinary use the part of the rail and the part of the groove having the V-form alone are required, and the perpendicular sides of the elevation on the top of the rail and the perpendicular sides of the groove only come into use when the windlasses and their chains are brought into action in the straightening of crooked logs, and then their use is to prevent the carriage from being thrown off the track by any lateral force that may be used for that purpose.

The use of the end bearings *w w w w*, Fig. 7, before mentioned, has been to some extent explained. Their value is found, namely, in this, that they change the friction from the sides of the wheels and top of the rail to themselves, and they are easily and cheaply renewed as often as may be necessary when worn out; whereas but for them the rails and wheels would soon be worn away. The result would be irregularity in the movement of the carriage and inaccurate sawing.

The setting of the axles obliquely across the carriage and the result of so doing have been hereinbefore explained.

The scrapers *n n o o* are pretty fully shown in the drawing. Their lower edges are formed to sweep and clear the upper surfaces of the rails of sawdust, bark, chips, and other trash.

They are exceedingly simple in their construction, and are merely confined in their mortises in the rails, through which they pass, in which they have free vertical play. When the wheels pass over any obstruction on the rails and are raised, the scrapers are not raised; but, on the contrary, their own weight holds down upon the rails, so that they never cease to scrape them. Those for the flat-topped rail have straight edges; those for the rails having V-formed tops have edges of corresponding form.

In Fig. 1, B B B are the head-blocks, and E is the pinion of shaft which passes through all the blocks, and by means of racks and pinions, one to each, they are caused to advance and recede in line.

The windlasses upon the sliding bases of the knees are turned by the ratchet-levers and held by the latches, as shown in the drawing. By means of these windlasses, with their hooks and chains, crooked logs are sprung until they are as nearly straight as practicable, and are held in that position while being sawed into long planks and timbers, and thus much timber is saved. One or more of the windlasses seated upon the shaft E, may be used in a saw-carriage. They are operated alike for the same purposes, and have the same parts with those mounted upon the knees, except that they do not move backward or forward; but the chains on their drums merely unwind as the knees advance, upon setting the log to the saw, so that the hooks in their chains advance with even pace with the knees. This correspondence in movement is the result of having the chain-drums and pinions of equal diameters. They are equally well adapted to use on the spring-shaft of self-receding head-blocks.

The gib-headed dog, before mentioned, is shown in Fig. 2. It is passed through a mortise in the standard, with a certain inclination, from gib to point, upward, and the bevel is almost wholly upon the upper side of the upper end, as shown.

The device is designed for use in sawing very large logs into planks or boards without facing or squaring. When one-third, more or less, of the log has been taken off, the rest of it will be inclined to slip outward at the bottom, and the result would be that the top edges of the planks afterward sawed would be too thin and the bottom edges too thick. Now the dog, upon entering the log between its center and top, with the upward inclination shown, will hold the same fast in position and prevent such slipping, and exert a con-

stant force to press the log against the knee. The bevel formation described, in combination with the inclination of the dog itself, produces the result sought by the invention. Thus, when the dog is driven into the log the bevel upon the upper side of it causes it to be pressed down upon the lower front edge of its mortise and up against the rear and upper edge of the same, and thus the slack in the dog is taken up. The upward inclination of the dog prevents its bevel-shaped point from crowding the log from the knee, but draws it against the same with a constant force.

The last of my improvements before mentioned is the locking devices for my hand-dog, for which a patent was granted me bearing date the 27th day of February, 1866. That device consists of a lever, *m*, pivoted to the knee C or to a separate, P, which is fastened to the knee. The lever is made with a screw-hole through its lower end to fit over the pivot of the hand-dog, which is also provided with a screw-thread. By raising the handle of the lever the lower end is forced by the action of the screw against the eye of the hand-dog and prevents the dog from turning, and holds it in any position in which it may be placed, as a vise would do, and the jarring motion produced by sawing will never jar it loose.

Claims.

I claim as my invention—

1. The wheel G, provided with vertical flanges *r* and *r*, and the V-shaped grooves, and the counter-formed top *g* of the rail D, constructed, arranged, and operating for the purpose described.

2. The wheel *g* provided with the axle *x*, having end bearings, as described, in combination with the saw-carriage A, provided with scrapers *o n*, head-block B, knee C, and gib-headed dog *g*, all constructed in the manner and for the purpose specified.

3. The combination of the windlasses mounted upon the sliding knees C C C and upon the shaft E, revolving in conjunction with the movement of the knees with the described saw-carriage, constructed and operated substantially as and for the purposes set forth.

4. The combination of the lever *m* with the hand-dog *n*, pivot *v*, and sliding knee C, as a device for locking said dog, constructed and operating as described.

Witnesses:

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