

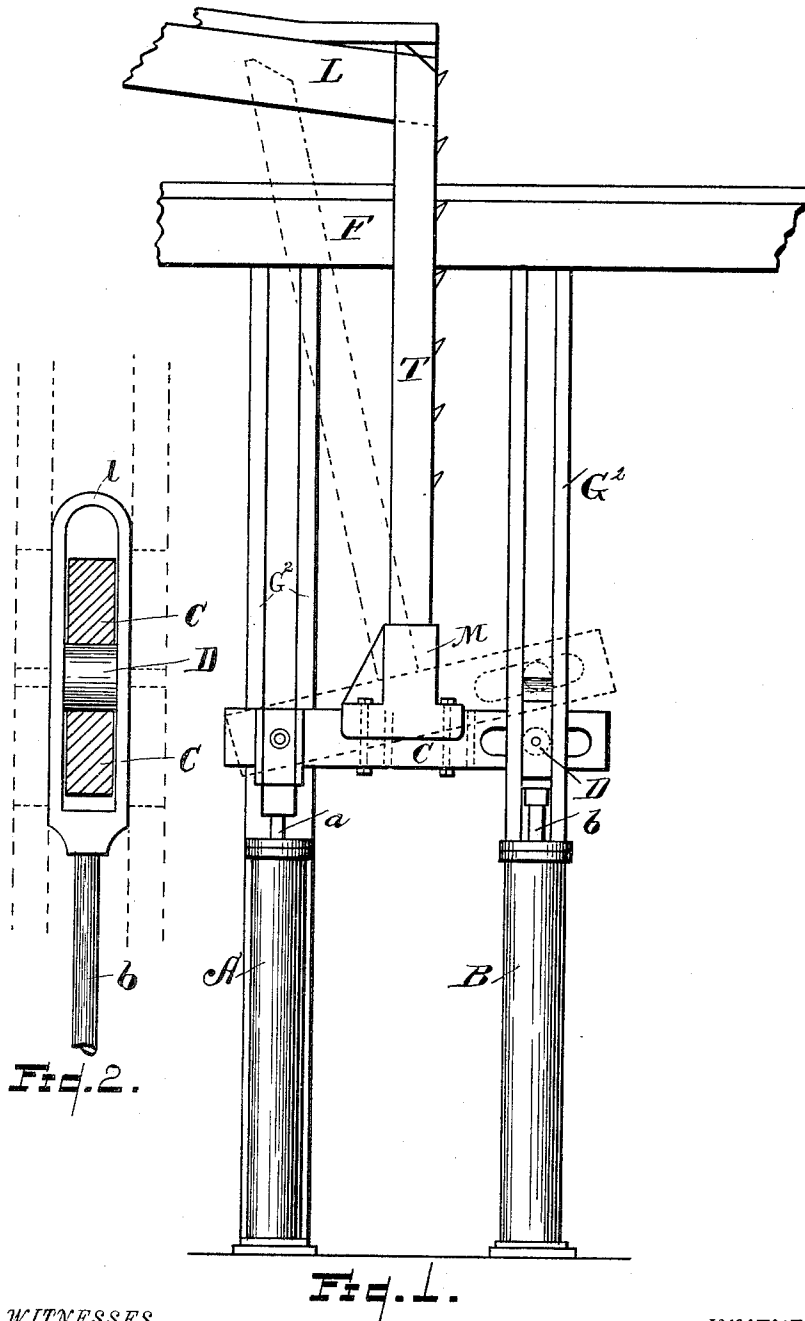
(No Model.)

2 Sheets—Sheet 1.

H. O. LANGE.
LOG TURNER.

No. 460,976.

Patented Oct. 13, 1891.



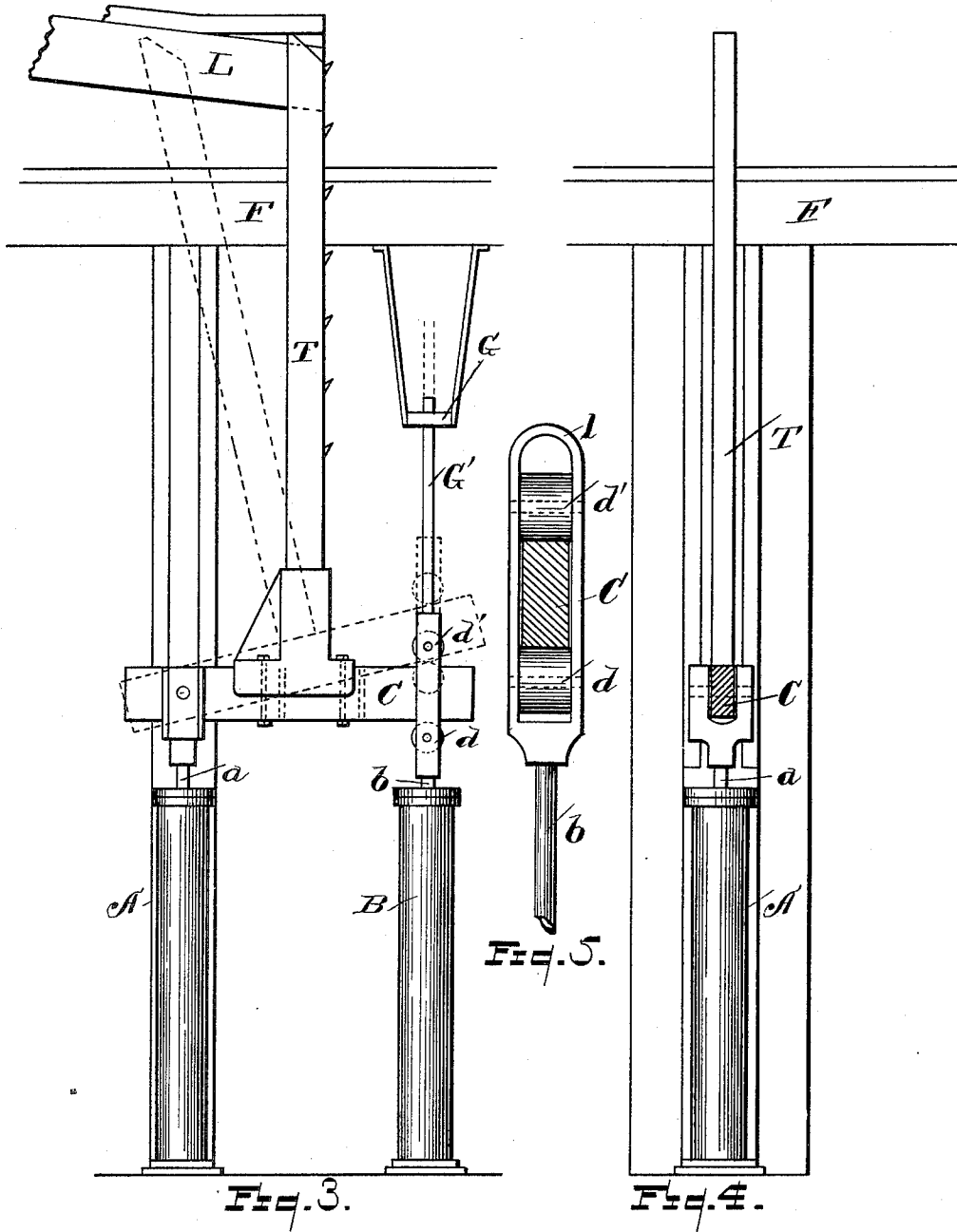
WITNESSES
W. S. Huxette
 Effie J. Croft

INVENTOR
Herman O. Lange
 by *Darker & Burton*
 his Attorneys

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W. S. Huyette
Effie J. Craft

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Herman O. Lange
by *Parker & Burton*
his Attorneys

UNITED STATES PATENT OFFICE.

HERMAN O. LANGE, OF MUSKEGON, MICHIGAN.

LOG-TURNER.

SPECIFICATION forming part of Letters Patent No. 460,976, dated October 13, 1891.

Application filed October 31, 1889. Serial No. 328,835. (No model.)

To all whom it may concern:

Be it known that I, HERMAN O. LANGE, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented a new and useful Improvement in Log-Turners, of which the following is a specification.

This invention relates to log-turners or machines by which logs may be turned on a log-deck and to and on the carriage of a saw-mill, and has for its object an improved device for controlling the ordinary tooth-bar used for that purpose by means of fixed steam-cylinders in place of the movable cylinder ordinarily used. In a log-turning device of this character it is necessary that the tooth-bar be so arranged that its top may move back and forth through a considerable arc, and also that the toothed portion of the bar may rise and fall through a considerable distance, and it is necessary that both of these motions be under the absolute control of the operator. I attain these results by means of the mechanism shown in the accompanying drawings, in which—

Figure 1 shows a side view of the tooth-bar and the two steam-cylinders, by means of which it is operated. Fig. 2 shows in detail an end view of the piston-rod of the cylinder B of Fig. 1. Fig. 3 shows a modified form, and Fig. 4 an end view, of the cylinder A with its piston-rod and cross-head. Fig. 5 represents an end view of the cross-bar C of Fig. 3 and of the looped extension of the piston-rod b, through which the cross-bar C is passed.

L represents the log-deck, and F the floor of the mill, beneath which floor is located the operating mechanism of the tooth-bar T. The operating mechanism consists of two fixed cylinders A and B, situated parallel to each other.

To the upper end of the piston-rod a of the steam-cylinder A is hinged a bar C, lying across from the upper end of the piston-rod a to the upper end of the piston-rod b of the cylinder B. The cross-bar C is slotted at the end which rests over the piston b, and through the slot passes a roller or slide D, journaled in a looped extension l rising from the upper part of the piston-rod b. Through the loop l also passes the cross-bar C.

From the top of the cylinder A extend upward guide rails or ways G². There are four of these rails, and the four form a way within which is confined and guided the end of the cross-bar C and the roller or slide S, and thus there is formed a cross-head movable vertically in the ways G² and connected movably by means of the roller D and the slot in the cross-bar C to the cross-bar C. This forms a sliding hinge between the cross-bar C and the piston-rod b, which allows the cross-bar C to be turned at angles with both of the piston-rods a b and permits the tooth-bar T to have a vertical motion or swinging motion or a compound vertical and swinging motion entirely under the control of the operator.

A second form of sliding hinge and vertical guide for the end of the piston-rod b is shown in Fig. 3, where the cross-bar C is imperforate and passes between two rolls d d' in the looped extension of the piston-rod b. In place of the vertical ways G², I make use of a bar G', extending upward from the upper part of the loop l and passing through a collar G, hung from the main frame-work of the mill. The friction-rollers d d' are separated far enough to allow the cross-bar C to assume a position between them at an angle with the piston-rod B sufficiently variable to allow the requisite swing of the upper end of the tooth-bar T. The tooth-bar T is stepped into a foot-iron m, which is made in the shape of an inverted T, having bolt-holes in the branches and a socket in the stem. This enables the user to place the tooth-bar and cross-piece in such relative adjustment as he may desire, or as may be required by the surrounding frame-work of the mill, and is exceedingly useful to enable the structure to be placed in mills previously erected in such a way as to avoid timbers and beams of the frame-work.

The cylinders employed are fixed in position and may be either double-acting or single-acting cylinders. Single-acting cylinders in which steam is admitted at the bottom will generally be found to be sufficient.

Having thus described my invention, what I claim as novel, and desire to have secured by Letters Patent, is—

1. The combination of a tooth-bar, two fixed

steam-cylinders, and a cross-bar supporting said tooth-bar, and hinged, as described, to the piston-rods of the said cylinders.

2. The combination of the cross-bar C, the 5 tooth-bar T, and the foot-iron *m*, arranged to be adjustably bolted to the cross-bar C and to hold the tooth-bar T, substantially as and for the purpose specified.

3. The combination of the cross-bar C, the 10 tooth-bar T, adjustably attached to it, the fixed cylinder A, with its piston *a* hinged to the cross-bar, and the fixed cylinder B, with its piston *b* connected to the cross-bar by a sliding joint, substantially as and for the purpose specified. 15

4. In a log-turner, two fixed cylinders having pistons moving in parallel lines, a cross-bar hinged to one of said pistons and connected to the other of said pistons by a sliding 20 joint, and a tooth-bar adjustably connected to said cross-bar, substantially as and for the purpose specified.

5. In a log-turner, the combination of a tooth-bar, two fixed cylinders, a foot-piece 25 rigidly fixed to the tooth-bar and hinged to

the piston-rod of one of said cylinders and connected to the other of said cylinders by a sliding joint, said sliding joint being composed of the following elements: a looped 30 extension to the piston-rod, a friction-roll journaled in and lying across the loop and passing through a slot in the foot-piece, guiding-ways parallel to the piston-rod, and guiding-slides outside the loop, arranged to slide 35 between the guiding-ways, substantially as and for the purpose described.

6. In a log-turner, the combination of two upright stationary steam-cylinders, a tooth-bar having a cross-piece at its base extending 40 to and connecting with the piston-rod of each of said cylinders, one end of said cross-piece being pivoted to one of said piston-rods and the other end being connected to the other of said piston-rods by a sliding joint, substantially as described. 45

HERMAN O. LANGE.

Witnesses:

R. A. PARKER,

WM. F. NINNEMAN.