(No Model.) 2 Sheets—Sheet 1.

H. O. LANGE.

LEVER ACTION FOR VALVE GEAR FOR LOG TURNERS.

No. 516,741. Patented Mar. 20, 1894.

Fig. 1.

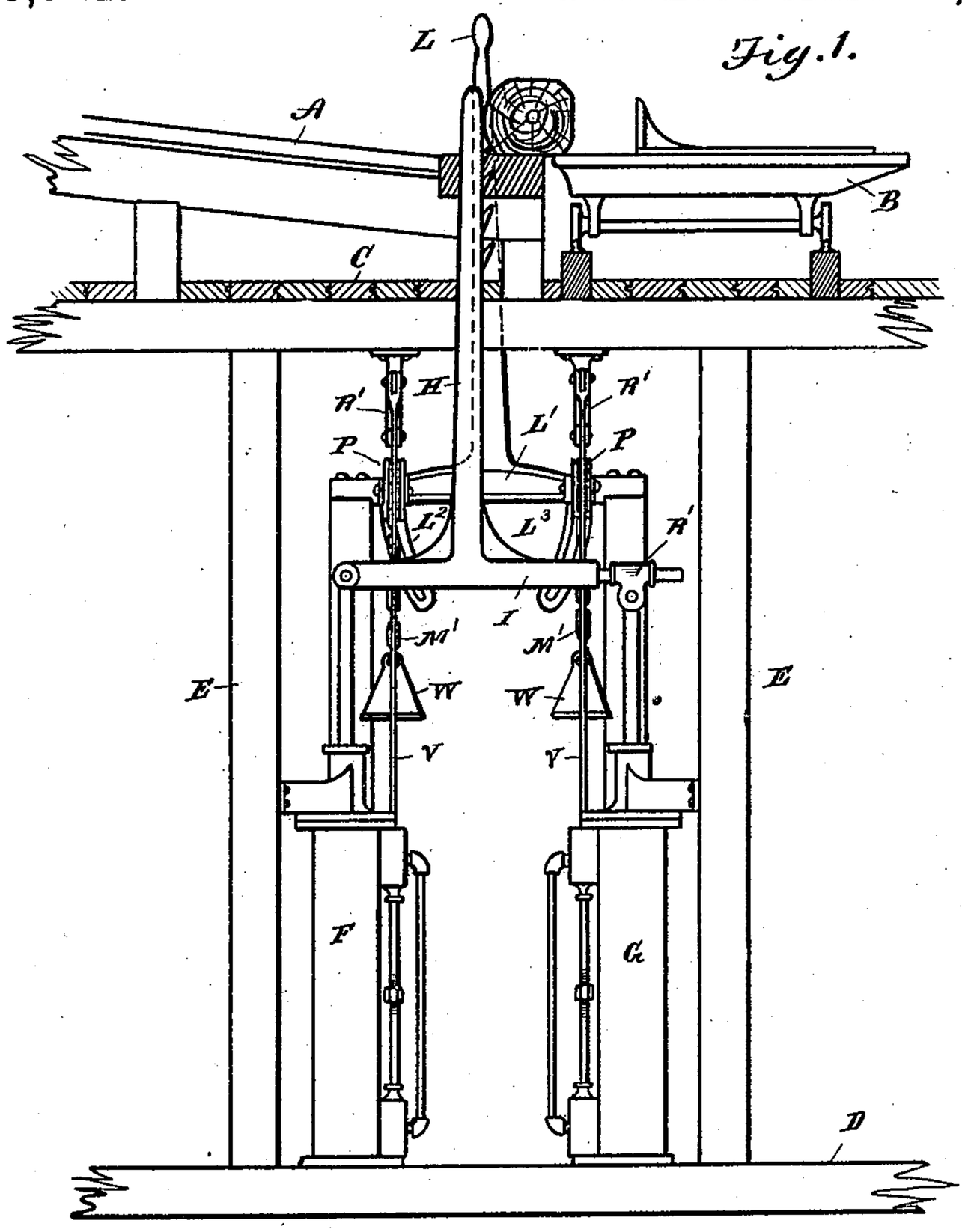
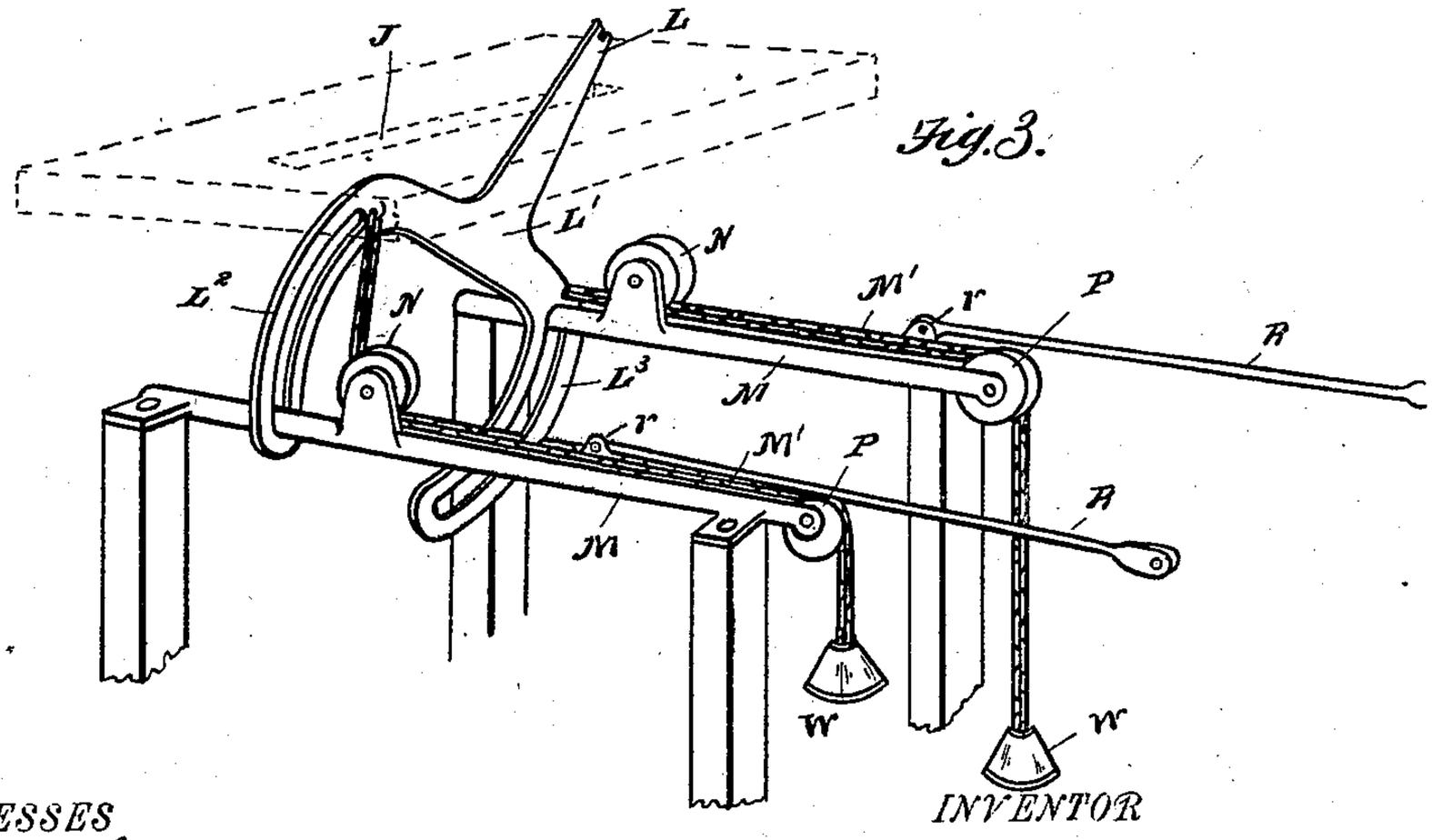


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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Fig 2

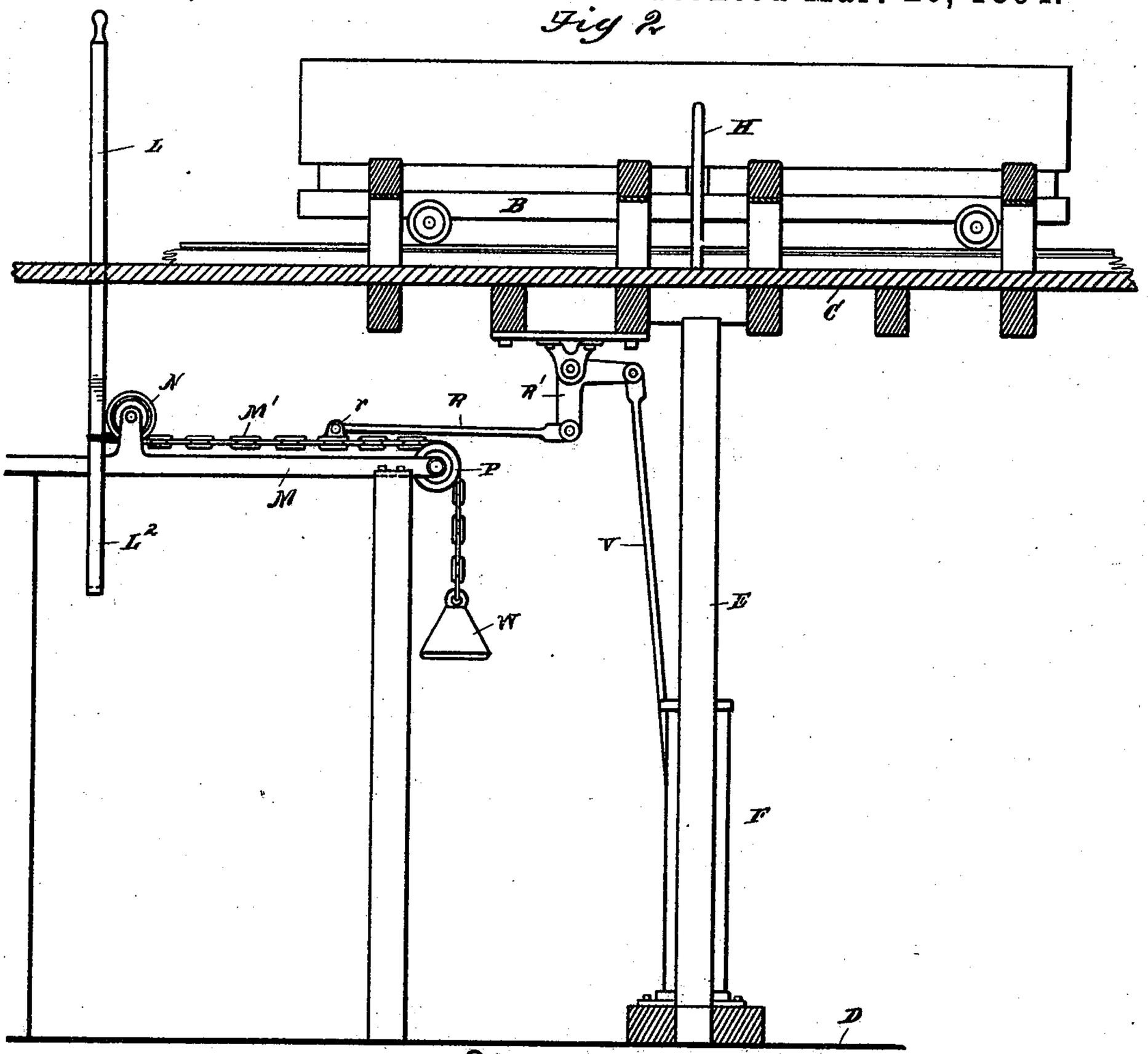
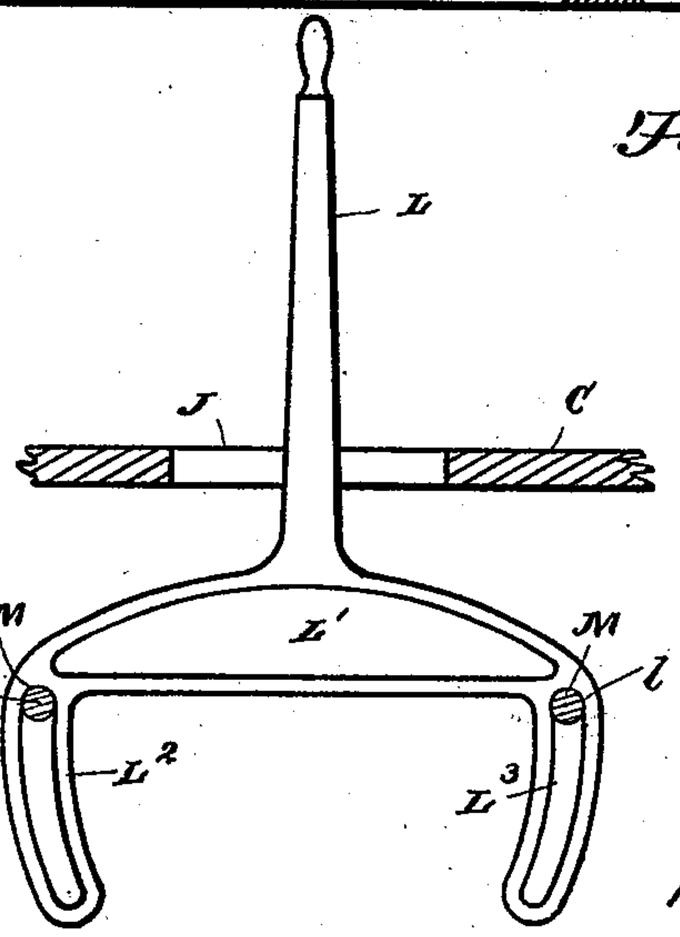


Fig. 4



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HERMAN O. LANGE, OF MUSKEGON, MICHIGAN.

LEVER-ACTION FOR VALVE-GEAR FOR LOG-TURNERS.

SPECIFICATION forming part of Letters Patent No. 516,741, dated March 20, 1894.

Application filed May 15, 1893. Serial No. 474,295. (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, county of Muskegon, State of Michigan, have invented a certain new and useful Improvement in Lever-Actions for Valve-Gear for Log-Turners; and I declare the following to be a full, clear, and exact description of the same, such 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, which form a part of this specification.

My invention relates to steam log turners, and especially to that class employing two steam cylinders.

It consists in a peculiar arrangement and combination of an operating lever, in connection with the valves for operating the same.

In the drawings, Figure 1 is a front elevation of the whole apparatus employing my invention. Fig. 2 is a side elevation from a point taken at right angles to that of Fig. 1. Fig. 3 is a perspective view, showing the hand lever and connections. Fig. 4 is a detailed view of lever.

In the drawings, similar letters refer to similar parts.

In carrying out my invention, A represents the log deck of a saw-mill; B, the log carriage; C, a section of the floor on which both rest; D, the foundation; and E, posts supporting the floor, and also supporting the two steam cylinders F and G. These cylinders carry pivotally attached to their respective piston rods a toothed bar H, having a cross bar I at its bottom, one end of which is pivotally attached to one piston rod, and the other end attached by a sliding attachment I′ to the other piston rod. All of these are old, and are not the essence of this invention, and hence are only used for the purposes of illustrating the relation of my invention to the log turner. In all devices of this kind, it is necessary to operate the valves of the steam cylinders separately or together, or partially separately and partially together. In order to obtain all the relative motions of the piston rods and the manipulation of the toothed bar necessary to its employment, it is extremely desirable that all of these variations in the adjustment of the valves shall be made with one lever, and that the direction in which the lever is moved, both as to direction of the lever and the distance in that direction which it is moved, shall bear a definite relation to the adjustment of the valves. I accomplish this in a very simple and efficient manner, by means of the device herein described and illustrated. In the floor of the mill I cut a slot J, this slot being of a width appproximately somewhat more than the thickness of the lever L. This lever is shown more particularly in Fig. 4. Its lower end carries a cross bar L′ of the proper length. Upon either end of this cross bar there preferably depend links L^2 L^3, of appropriate length to permit, as will hereinafter be seen, the operation of the valve, each link having a curvature in the arc of a circle, of which the upper end of the other link is a center; the centers are shown in Fig. 4 at *l*, *l*. Underneath the floor, there is erected a frame-work carrying two rods, one of which is shown in Fig. 2, and shown in perspective in Fig. 3. These rods are marked M, M. They are of such size and so adjusted that they substantially fit the links, and when the lever is in a central position, the upper ends of the links rest upon the rods M, M, in the position shown in Fig. 4. Upon the upper side of these rods, and in relatively close proximity to the location of the lever L, are mounted sheaves or pulleys N N. These are adapted to permit chains, M′, to be drawn under them, as shown especially in Figs. 2 and 3. As they are situated immediately under the slot in the floor through which the lever L passes, they also serve as lugs or abutments, which prevent the motion upon the rods M M of the links L^2 L^3, hereinbefore described, so that the normal position of the lever is with the arms respectively against the sheaves as abutments. Just above the links are attached chains M′, passing under the sheave, and thence to the opposite end of the frame-work and over other sheaves, P P, and downward, and from which depend weights W W. It is obvious that the position of the weights would compel the ends of the cross bar L′ to be drawn up forcibly against the sheaves hereinbefore described, and would retain them in that position as the normal position of the device. Attached to each of the chains at *r r* is a rod R, the oppo-

site end of the rod connecting with the bell crank R′, the opposite end of the bell crank connecting with the valve stem V of the valves. In the position shown in Fig. 2, the valve would remain normally closed. If the lever were drawn directly toward the log in that position, as shown in Fig. 3, it would pivot through the slot in the floor, draw upon both chains equally, raising their weights, and open both valves equally. If the lever were operated to the right or the left, it is obvious that it would pivot upon one of the rods M, and the link—say L^2—would be raised from the opposite rod. In consequence of such lifting, it would draw upon the chain underneath the sheave N, would hence raise the weight W upon that side, connect with the chain, and through the chain draw upon the rod R, operating the bell crank to which it was connected, and through it the valve stem and valve of the appropriate cylinder. Reversing the motion, and pivoting upon the first named bar M, would raise the opposite link, when the operation would be exactly the same, so far as opening the valve in the opposite cylinder is concerned. It is obvious from this description and mode of operation, that any combination of partially and wholly opening the valves can be secured by the lever and by its compound movements. For instance, if it is partially moved toward the log, at its upper end, and also tilted in the direction of the length of the slot, it will open both valves, but one more than the other. A reversal of this, or tilting in the opposite direction, would reverse the valves as to the relative amount of opening and closing. Upon letting go of the lever, the weights would draw it to the position shown in Fig. 2, and, operating the rods R R at the same time, would compel the closing of the valves.

What I claim is—

1. The combination of the lever L having three pivotal points, two of which are at the extremities of bifurcations in said lever, and the third at a point not in the same horizontal plane as the other two, all constructed and operating substantially as described, fulcrum points corresponding to the pivotal points of said lever and means connected to said lever for operating separately or synchronously the valves of two steam cylinders, as and for the purpose set forth.

2. In a lever gear for operating the valves of a log turner, the combination of a lever passing through a rigid fulcrum having a pivotal slot and bifurcated at its lower end, transverse bars operating as pivotal points for the lower ends of the arms, means connecting with the valve mechanism and with the arms of said lever, counterweights attached thereto, and stationary sheaves acting as abutments, against which said weights are respectively adapted to draw said lever into its normal position, substantially as described.

3. In a lever gear for operating the valves of a log turner, the combination of a lever bifurcated at its lower end and carrying thereon dependent links, transverse bars operating as pivotal points for each of said links, a chain connected with the valve mechanism and with said lever, a counterweight attached to said chain, and an abutment against which said weight is adapted to draw said lever into its normal position, and means for opening and closing the valves connected therewith, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

HERMAN O. LANGE.

Witnesses:
R. A. PARKER,
MARION A. REEVE.