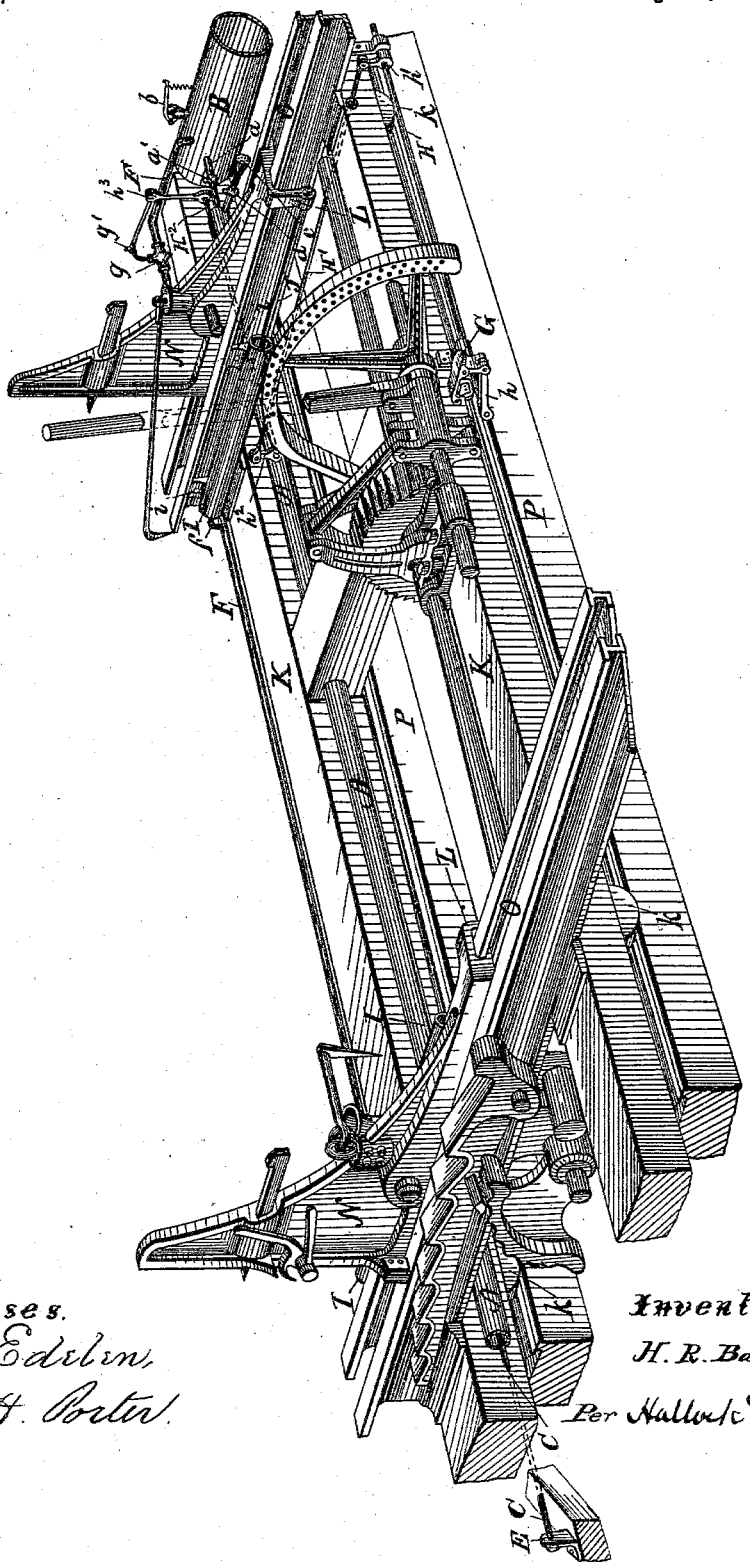
(No Model.)

H. R. BARNHURST.

SAW MILL HEAD BLOCK.

No. 301,472. Patented July 8, 1884.



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UNITED STATES PATENT OFFICE.

HENRY R. BARNHURST, OF ERIE, PENNSYLVANIA.

SAW-MILL HEAD-BLOCK.

SPECIFICATION forming part of Letters Patent No. 301,472, dated July 8, 1884.

Application filed March 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY R. BARNHURST, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented a new and useful Improvement in Saw-Mill Head-Blocks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and the letters or figures of reference marked thereon.

My invention relates to saw-mill head-blocks; and it consists in providing certain improved devices for receding the knees, standards, or jacks for the reception of a new log. The knees or standards of a saw-mill carriage move upon the face of the head-blocks and advance the log to the saw. When the log has been sawed up into boards, the knees have to be receded for the reception upon the blocks of a new log. This backward motion should be accomplished quickly and with as little exertion of power as possible. Many devices have been used for this purpose, one of the most desirable of which, perhaps, is that which consists of springs so applied that as the log advances the springs are wound up, and when it is desired to recede the knees by loosening proper devices the springs recoil and reverse the action of the mechanism which advanced the knees, and thereby recede them. One of the objections to this device is that the setter, in advancing the knees, must apply sufficient power to not only move the log forward, but also to wind up the spring. Another is the liability of the springs to break or become otherwise deranged. The device is, however, highly advantageous, for the reason that the knees are reversed quickly and without any movement by the setter except the movement of a lever, which releases the ratchet or clutching device.

My invention consists, broadly, in the application of compressed air to perform the functions performed by the coiled springs in the former device. To this end I provide an air-pump, a reservoir, cylinders, and pistons, applied in proper conjunction with the knees, and means for the application of compressed air from the reservoir to the piston chambers or cylinders in such a manner as to move the knees for the purposes named. The air-pump I so apply that the movement of the mechanism in the operation of sawing will operate it, and this I do at such a time in the operation of sawing as to use surplus power.

My invention is capable of application in very many ways to the carriage and blocks without in any way changing its essential features. I do not therefore desire to be limited to the form, location, or mode of operation of parts as they are shown in the drawings and will be hereinafter described; nor can I at this time, nor is it necessary to a full understanding of my invention that I should, describe and show the many modifications possible.

While I have stated that my invention broadly consists in the application of compressed air for the movement of the knees backward, I desire also to claim the converse of this—viz., the exhaustion of air from the cylinders and using the pressure of atmospheric air.

I am aware that compressed air and atmospheric pressure are in common use for the operation of many kinds of mechanism, and shall not therefore broadly claim the application of these forces except as in the combination shown.

My invention is illustrated in the accompanying drawing, as follows:

The figure is a perspective view of a saw-mill carriage and head-blocks, in which K is the frame-work of the carriage, and *k* the wheels on which it is mounted. O O are the head-blocks, and N N are the knees or standards. These parts and the set-works, stops, and other devices incident may be of any common or desired construction.

In the drawing the right of the figure is the front of the carriage, and in "feeding" the carriage moves in that direction, and hence in "gigging" it moves toward the left of the figure. At any convenient point on the carriage I place an air-reservoir, B. Along the length of the carriage, at any convenient point, I place a tube or pipe, A, which constitutes the barrel of the air pump or compressor. A plunger-rod, C, which is attached at the foot of the runway of the carriage, carries a piston fitting within the barrel A. This barrel may be ordinary wrought-iron tubing—say three inches in diameter, more or less. As the carriage moves forward to saw the log, the plunger is drawn to the upper or outer end of the pump-barrel, and the barrel fills with air. This operation requires the exertion by the mech-

anism operating the mill of no additional power. When the carriage is gigged, the plunger C is driven into the barrel and drives the air into the reservoir B. This operation of course requires considerable exertion; but as the mill, when gigging, has a surplus of power, it may as well be used for this purpose. Thus it will be seen that the movement of the carriage in the operation of sawing is utilized to provide a supply of compressed air. The reservoir is provided with a relief-valve, *b*. The inlet to the pump is marked *e*, and is provided with a check-valve, *d*. *a* is the educt from the pump to the reservoir, and is provided with a check-valve, *a'*.

I I are cylinders attached to the side of the blocks O O. The piston-rods, J J, of these cylinders connect with the knees N by brackets L. A supply-pipe, F, from the reservoir B, runs along the carriage, and by branches *f* connects with the ends of the cylinders I I, and when by this means air is let into the cylinders the piston-rods J will be driven out and the knees be carried back rapidly. The means for admitting the air to these cylinders should be such that the knees will move back simultaneously, and they should be under convenient control of the setter. The devices shown for this purpose are as follows: At the point where the setter stands on the side of the carriage is a foot-lever, G, which is connected by a lever, *h*, with a rock-rod, H, and it by a lever, *h'*, with a connecting-rod, H', and it by a lever, h^2, with a second rock-rod, H^2, and it by a lever, h^3, and rod *g'* connects with a throttle, *g*, in the pipe F near the reservoir. By pressing the foot upon the lever G the setter will open the throttle *g*, and the two cylinders I I will be simultaneously supplied with air. In place of the two cylinders I I, operating directly upon the knees, one may be used upon one knee, and as it operates it, the other knee will be carried back through the action of the main setting-shaft; or the one cylinder may operate directly upon the setting-shaft at some convenient point and move it in a reverse direction, and thus recede all the knees.

Cylinders may be entirely dispensed with and a rotary motor be used, operating directly upon the setting-shaft, to give it a reversing motion.

The compression of the air may be effected by compressors operated wholly from beyond the carriage, and the reservoir may be stationed off the carriage and connected therewith by flexible hose. A rotary compressor may be used in place of the pump shown, and be so arranged upon the carriage as to operate as the carriage is gigged by a traction-gear or similar attachment. In case this latter device should be used, it can be so applied as to compress the air into the reservoir during the operation of sawing, and afterward act as the motor to reverse the knees.

It having been shown above that an air-motor may be used to recede the knees, it is obvious that by arranging an air-motor to operate inversely from the one shown and described it will move the knees to push the log toward the saw-line. In connection with such an apparatus it will be necessary to apply devices which will regulate the movement of the knees, so as to set the log always the proper distance.

What I claim as new is—

1. In a saw-mill, the combination of a log-carriage, an air-motor having its reservoir charged by the movement of the carriage, and knees having means for pushing the log toward the saw-line and connected with said reservoir, substantially as described, whereby when the compressed air in said reservoir is released the knees are drawn from the saw-line, for the purpose set forth.

2. In a saw-mill, the combination of a log-carriage, an air-motor having a reservoir provided with a pump operated by the forward movement of the carriage, knees having means for moving the log toward the saw-line and connected with said reservoir by piston, which draw the knees back, when the compressed air escapes from the reservoir, and means for releasing the compressed air from the reservoir.

3. In a saw-mill, the combination of a device which pushes the log sidewise toward the saw-line, an air-pumping device operated by the movement of the log-carriage, a storing-reservoir connected to the air-pump, and an air-motor connected with and for reversing the motion of the log-pushing device, substantially as described.

4. In a saw-mill, the combination of a device which pushes the log sidewise toward the saw-line, an air-pumping device operated by the movement of the log-carriage, a storing-reservoir connected to the air-pump, an air-motor connected with and for reversing the motion of the log-pushing device, and an air-conducting device between the reservoir and motor, substantially as described.

5. In a saw-mill, the combination of a log-carriage having a device for pushing the log toward the saw-line, an air-motor connected to and for reversing said pushing device, and a lever located as described and connected to the motor by rods, one of which is attached to the escape-tube of the motor's reservoir, substantially as described.

6. In a saw-mill, the combination, with the knees or standards, of the air-pump A, operated by the motion of the log-carriage, reservoir B, connected with the air-pump, supply-pipes F, connecting the cylinders I I, said cylinders I I, suspended from the knees, piston-rods J J in the cylinders I I, and brackets L, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of October, 1881.

H. R. BARNHURST.

Witnesses:
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