L. Sterens,

Boring Wood,

No. 18,370, Patented Oct. 6, 1857.

Fig. 1

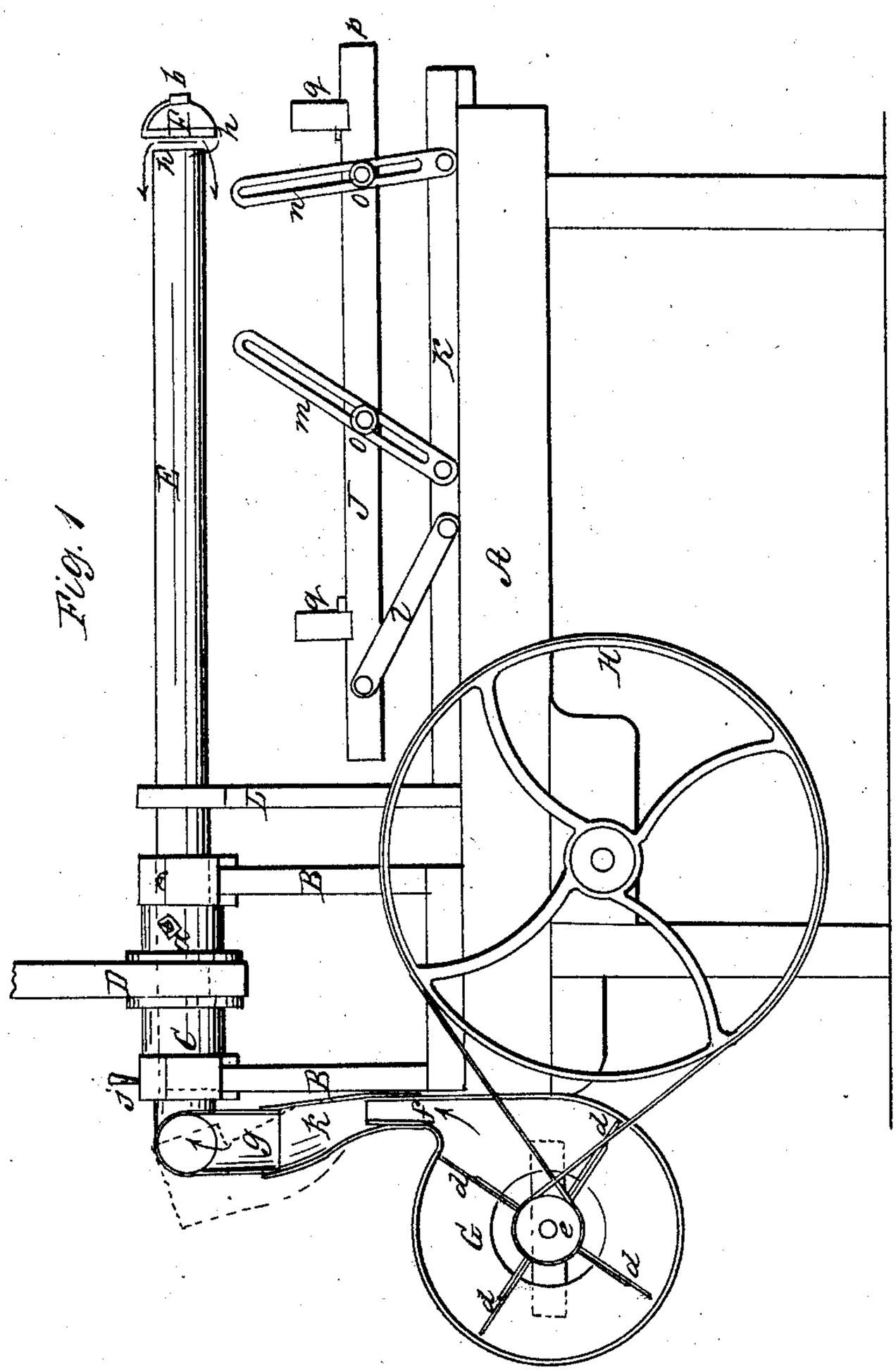
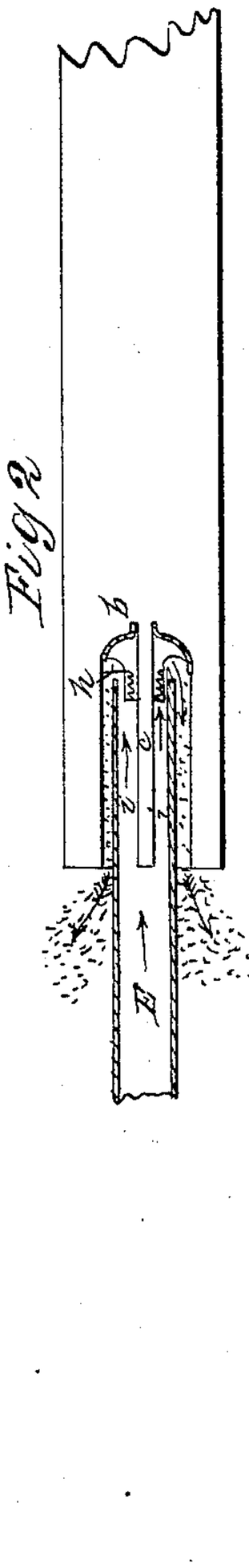


Fig. 2



UNITED STATES PATENT OFFICE.

LA FAYETTE STEVENS, OF ELMIRA, NEW YORK, ASSIGNOR TO WM. L. GIBSON, OF SAME PLACE.

WOOD-BORING MACHINE.

Specification of Letters Patent No. 18,370, dated October 6, 1857.

To all whom it may concern:

Be it known that I, LA FAYETTE STEVENS, of Elmira, in the county of Chemung and State of New York, have invented a new and useful Improvement in Machines for Boring Wood; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon.

My invention consists of an improved method of clearing the chips from the auger in boring pump tubing and is applicable to all cases where long boring in timber is required.

Figure 1 is an elevation, and shows the general arrangement of the machine. A is the frame, which may be of wood. B B, are iron bearings which form the head stock of the hollow shaft C. D is a band pulley by which this shaft is driven, by any convenient power. This shaft has a hollow extending through it as indicated by dotted lines in the drawing—into one end the boring tube E slides, and is secured by the set-screw *a*. It consists of a smooth and straight tube of iron or other metal, of the length desired to bore. Upon the end opposite to the pulley D the cutter F is attached. The cutter is of annular form, being the same as described in the specification of my improvements in annular augers, having a leading spur *b* in advance of the cutting edges, which may be two or more in number.

The center of the wood is not removed, but passes as the boring proceeds, through the annular spur *b*, and thence through the center of the tube F as shown at *c*, Fig. 2, which is a longitudinal section of the auger and timber in the operation of boring.

G, Fig. 2 is a fan-blower, *d d* being the fans, which are attached to the shaft of the pulley *e*, which is driven at a high rate of speed by a band from the large wheel H. This wheel may be connected with the driving power by a belt or shaft or by any convenient appliance. The blast of the fans passes through the throat *f* into the blast-pipe *g* which connects with the hollow shaft C from whence it is driven through the hollow of the boring tube E, emerging through small apertures *h h*, immediately back of the cutter F. These openings are smaller than its previous passages, thus concentrating it into jets of great force, which act directly upon the chips as they leave the cutting knives, and the blast, finding no other means of escape, returns to the end of the timber, where it discharges its burden as shown at Fig. 2. The core, it will be seen does not fill the entire cavity of the tube, but leaves an annular space around it, *i i*, through which the blast readily passes and the cutter head F being considerable larger than the tube E, cuts a hole of sufficient size, to freely admit of the blast passing out of the end of the timber, around the tube E. The arrows on the drawings indicate the course of the blast. An air pump of simple construction, worked by the machinery that drives the auger, will have an equally good effect. The power necessary to work the blower or the pump, is more than compensated for by the diminished friction in the auger itself, no part of which comes in contact with the wood but the cutter head. In order to reduce the chips to a smaller size it is advisable to use two or more cutters as the lighter the chips that are made the more easily they are disposed of. The blast-tube *g* is readily detached from the shaft C by removing the pin *j*, and is provided with a flexible portion at *k* which admits of its being thrown back far enough to remove the core *c* when the timber has been bored through.

J is a movable table on which the timber is placed to be bored. It is connected with the carriage K by three lateral coupling bars upon each side. One of these *l* is bolted at each end, one to the carriage K, the other to the table in such a manner as to lie nearly horizontally, when the table rests on the carriage. The next, *m*, is bolted to the carriage near the point where *l* is attached, but has a slot nearly its entire length through which a set-screw *o* passes and enters the table J. The third, *n*, is similarly arranged, and supports the end of the table. The bars swing on all their fastenings, and when it is desired to elevate the table, it is only necessary to draw the end *p* in a direction from the machine, when the movement raises it at once by the action of the bar *l*. When in the proper position it is only necessary to tighten the set-screws, *o o*, to secure it. If it is to be long used in a certain posi-

tion, a block may be placed under each end of the table, which will effectually prevent any displacement to which it might be liable from the jarring of the machinery.

q q are clamps for securing the timber in its place while being bored.

L is a standard which rises from the front part of the carriage K and forms a rest or bearing for the tube E. This rest being attached to the carriage, slides back with it, and when the boring commences, forms a journal for the auger immediately back of the cutter heads. The auger being light is not subject to much vibration. It is therefore less liable to diverge from its course than it would otherwise be. But it is guided effectually by the core *c*, which fits closely to the opening through the cutter head F and prevents any deflection from its true line. If necessary to give a more effectual bearing at the head than is given by the spur *b* and core *c*, it may readily be done by the addition of a thin collar placed just back of the cutters resting on a ring or skeleton frame which would not intercept the action of the blast.

Boring machines on this principle are cheaply constructed, the parts being few and simple and not liable to get out of order. Various sizes may be given to the bore, by employing cutterheads of different diameters, being careful to leave sufficient space around the tube E, for the chips to escape readily.

What I claim as my invention and desire to secure by Letters Patent, is—

Employing the elastic force of air when introduced as a blast through one or more tubes or jets immediately at, or closely following the bit or cutters as described or by any analogous means of application having substantially the same effect for the purpose of removing the chips and dust.

LA FAYETTE STEVENS.

Witnesses:
EDWD. V. COULTON,
J. FRASER.