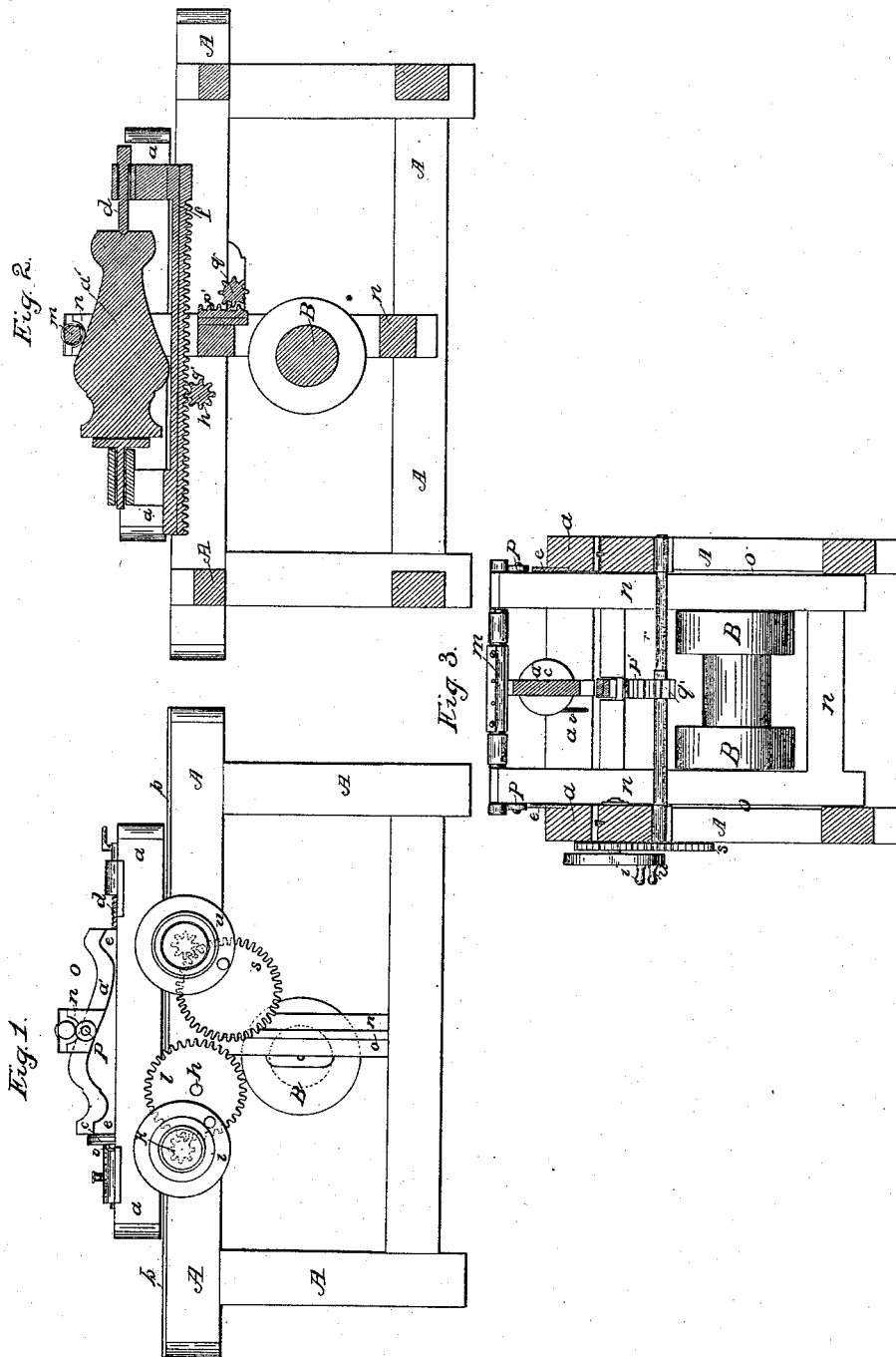


W. HALE & A. GOODMAN.

Machine for Shaping Irregular Surfaces in Wood.

No. 4,120.

Patented July 22, 1845.



UNITED STATES PATENT OFFICE.

WARREN HALE AND ALLEN GOODMAN, OF DANA, MASSACHUSETTS.

IMPROVEMENT IN SHAPING IRREGULAR SURFACES IN WOOD.

Specification forming part of Letters Patent No. 4,120, dated July 22, 1845.

To all whom it may concern:

Be it known that we, WARREN HALE and ALLEN GOODMAN, both of Dana, in the county of Worcester and State of Massachusetts, have invented new and useful improvements in machinery for reducing blocks of wood to certain desired forms and planing the surfaces of the same smooth at one and the same operation; and we do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein we have set forth the nature and principles of our said improvements, by which our invention may be distinguished from others of a similar class, together with such parts or combinations as we claim and desire to have secured to us by Letters Patent.

Our machinery belongs to that general class of inventions which have for their object the reducing of plain blocks of wood to any desired irregular form; but our invention is believed to differ both in its operation and results from those which have heretofore been contrived. The machines which are now in use for the turning of lasts, gunstocks, &c., produce these effects by the revolution of a pattern which guides and thereby causes the cutting-tool to reduce the rough block to a similar form to the pattern, and the articles formed are irregular in all directions and are left in a rough state when delivered from the machine. In our machine the model or pattern also governs the shape to be given to the rough block, but does not revolve, and while the articles produced by the same—such as piano-legs, &c., which heretofore have been made by hand mostly if not exclusively—are irregularly or eccentrically shaped longitudinally they are plane in a transverse direction and cannot be turned by a revolving pattern, and, moreover, the surfaces when cut by our apparatus are perfectly smooth and fitted for the application of veneers, &c.

The main features of our machinery are, first, a rectangular carriage moving horizontally on rails and holding the rough block firmly in the center, and having also a perfect pattern on each side of the carriage; and, secondly, a revolving planing-cylinder similar to those in common use arranged in a vertical sliding frame, the motions of said frame be-

ing controlled or guided by the patterns aforementioned, as will be shown in the sequel.

The figures of the accompanying plate of drawings represent our machine.

Figure 1 is a side elevation. Fig. 2 is a longitudinal vertical section, and Fig. 3 is a transverse vertical section.

A A A A, &c., in the several figures, represent the frame-work, which may be made of wood or iron and should be strongly put together.

B B, Figs. 1, 2, and 3, is the driving-drum from which bands pass to and around each end of the planing-cylinder to give it its requisite revolutions.

a a a is the horizontal carriage, which is a rectangular frame strongly put together and moving forward and back on suitable rails b b fixed on the top of the frame-work A A A. Proper provisions are made for holding the rough block of wood a' in the center of this carriage by means of the common lathe-chuck c and the screw-holder d. On each side of the carriage a a a, as hereinbefore suggested, a pattern e e e e is firmly fixed, the tops of which are finished smoothly and have the irregularities or shape in longitudinal section that it is desired to give that face of the rough block a' on which the cutter is to operate. The horizontal carriage a a is moved forward and back by means of a rack f f and pinion g, Fig. 2, engaging with it. The shaft h on which the pinion g is fixed is revolved by hand-power applied to a crank-wheel i on the same shaft with the cogged pinion k, (shown by dotted red lines in Fig. 1,) which pinion k works with the geared wheel l on the end of said shaft h.

The planing-cylinder m, Figs. 2 and 3, is constructed in the ordinary way with longitudinal knives attached to a cylinder or to circular heads, but must be of small diameter in order to make the abrupt turns necessary in giving shape to such articles as are to be wrought upon by our machinery. The journals of this cylinder have bearings in the top of the vertical sliding frame n n, Figs. 2 and 3, said frame being provided with guide-rails o o, which move in grooves in the inside of the frame-work. This frame n n is hung as it were upon the patterns e e e e of the horizontal carriage by means of friction-rollers p p, attached to the exterior of said frame,

and which rest on the top surfaces of said patterns. These rollers should be of the same diameter as the cutting-cylinder in order to cause said cylinder to cut longitudinal irregularities on the block precisely similar to those of the patterns. A greater or less number of these friction-rollers may be placed between the journals of the cylinder and the tops of the patterns, the diameter being kept as above specified, in order to cut larger or smaller articles of the same shape. The vertical motion of the frame *n n*, guided by the rollers aforesaid, is produced by the same means as is the horizontal motion for the carriage *a a a*—viz., the short rack *p'* and its pinion *q* on the shaft *r*, and the geared wheel *s*, cogged pinion *t*, and crank-wheel *u*—to which hand-power is applied, the whole arrangement and operation of these several parts being substantially the same as those described for similar parts connected to the horizontal carriage *a a a*.

The mode of operating our machine will be apparent without any lengthy description.

The machine requires the care of only one operative, who moves the horizontal carriage *a a a* with one hand applied to the crank-wheel *i*, while the other hand being applied to the crank-wheel *u* raises and lowers the vertical sliding frame *n n*, which supports the planing-cylinder, the operative being guided in this part of the work by keeping the friction-rollers *p p* in contact with the top surfaces of the patterns *e e e e*, attached to the

horizontal carriage. After one side of a piano-leg or other similar article has been cut out and planed the other three similar faces may be formed in the same manner by turning the rough block round first through an arc of ninety degrees, then of one hundred and eighty degrees, and then two hundred and seventy degrees from the first point, fastening it at the end of each quadrant by the spring-clutch *v*, which engages with suitable holes in the face of the chuck *c*.

Having thus described our machinery, what we claim as our invention, and desire to have secured to us by Letters Patent, is—

The method hereinabove described of copying or forming the longitudinal irregularities of piano-legs and other similar articles on rough blocks of wood by means of a carriage moving horizontally against the revolving cutter and holding both the pattern and the rough block, the cutting-tool being raised and depressed for depths of cut by rollers resting on the patterns, the whole method or *modus operandi* being substantially as hereinabove set forth.

In testimony that the foregoing is a true description of our said invention we have hereto set our signatures this 18th day of April, in the year 1845.

WARREN HALE.
ALLEN GOODMAN.

Witnesses:

WM. HARTT,
ANDREW SMITH.