2 Sheets—Sheet 1.

R. RICHARDI.

Wood-Shaping Machine.

No. 218,196. Patented Aug. 5, 1879.

Fig. 1.

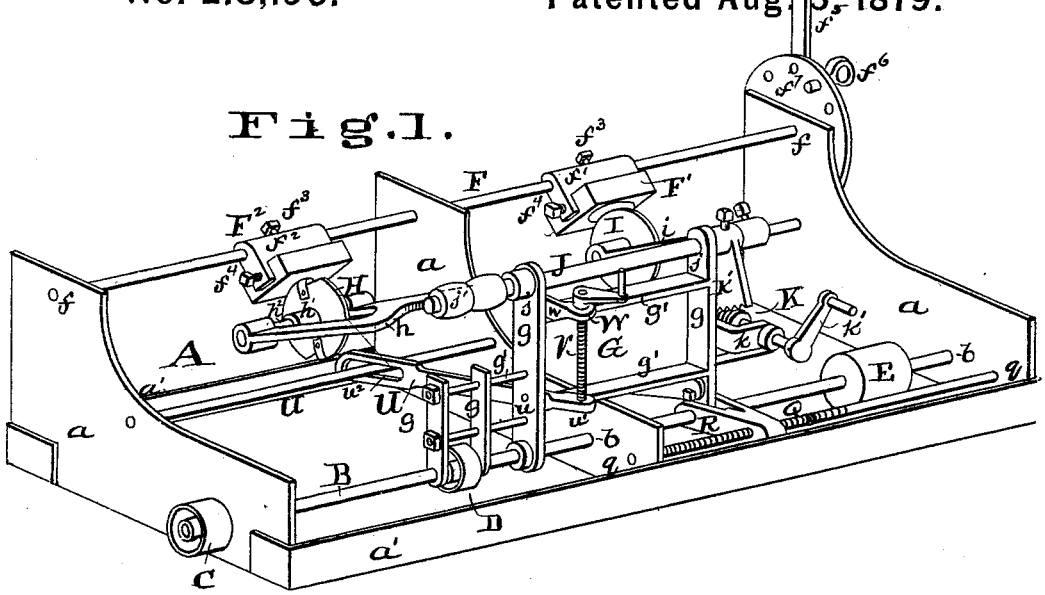
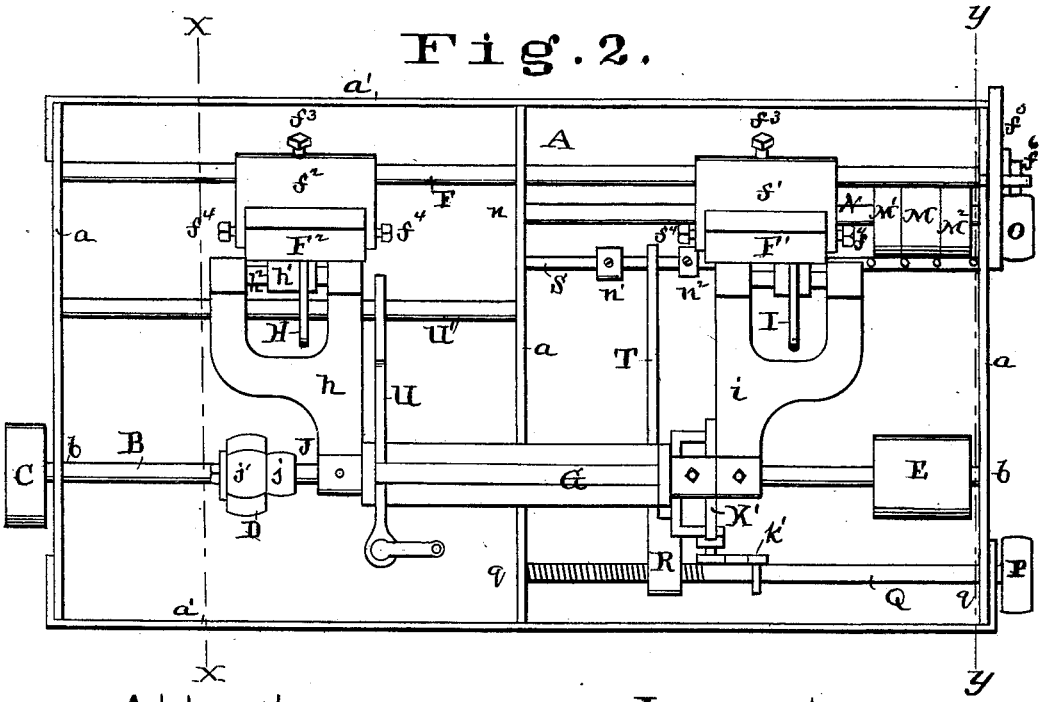


Fig. 2.



Attest.

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2 Sheets—Sheet 2.

R. RICHARDI.

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Fig. 3.

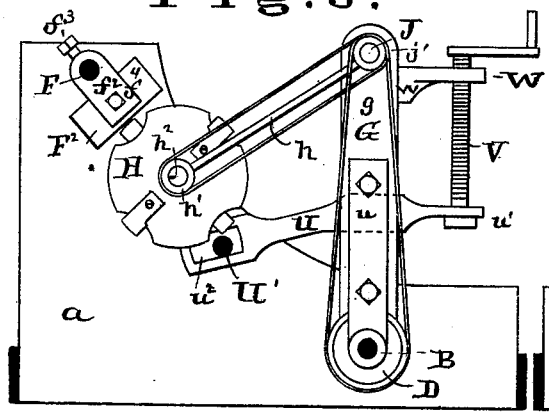


Fig. 4.

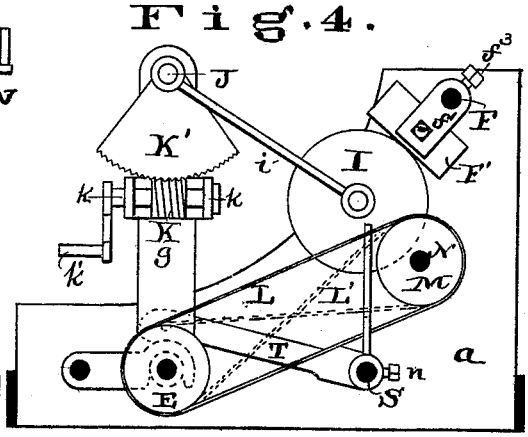
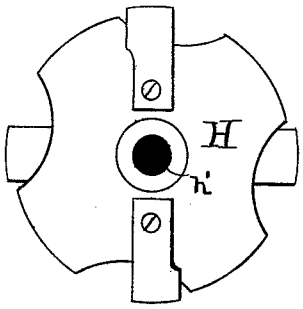


Fig. 5.



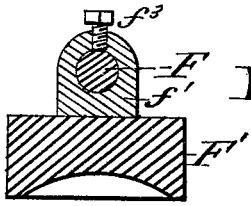


Fig. 7.

Fig. 8.

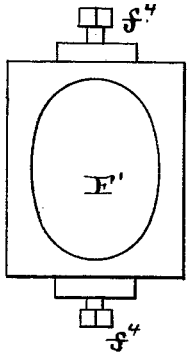
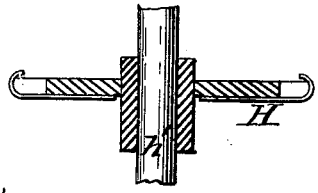


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROBERT RICHARDI, OF LOUISIANA, MISSOURI.

IMPROVEMENT IN WOOD-SHAPING MACHINES.

Specification forming part of Letters Patent No. **218,196**, dated August 5, 1879; application filed March 14, 1879.

To all whom it may concern:

Be it known that I, ROBERT RICHARDI, of Louisiana, Missouri, have made new and useful Improvements in Wood-Shaping Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a view, in perspective, of a machine containing the improvements; Fig. 2, a plan of the same; Fig. 3, a vertical section taken on the line *x x* of Fig. 2; Fig. 4, a vertical section taken on the line *y y* of Fig. 2; Figs. 5 and 6, details, being, respectively, a side elevation and a cross-section of the cutter-head and the parts immediately therewith connected; and Figs. 7 and 8, details, being, respectively, a cross-section and a face view of the pattern-block.

The same letters denote the same parts.

The present invention is an improvement in that class of shaping-machines wherein a model or pattern is used in conjunction with a blank, the outline of the pattern guiding the cutting-tool to produce a duplicate from the blank.

It has relation especially to the following points: the means for holding and adjusting the pattern and blank; the means for supporting the cutter and pattern-wheel, and for adjusting these parts, respectively, to the blank and pattern; the means for regulating the depth of the cut, and the general combination of the various parts of the device.

Referring to the drawings, A represents the frame of the machine, consisting of the uprights *a a a*, united by the cross-bars *a' a'*. B represents the main shaft, journaled in the uprights at *b b b*. It is provided with the pulley C, by which motion is communicated to the shaft, the pulley D, by which the motion of the shaft is imparted to the cutting mechanism, and the pulley E, by which motion is imparted to the mechanism for moving the cutter-frame to and fro upon the main shaft.

F represents a shaft journaled in the uprights at *f f*. It serves to support the pattern F^1 and the blank F^2. The pattern and block are held, respectively, in chucks f^1 and f^2, that are upon and that can be turned around the shaft F, so as to present the pattern and blank at any desired angle, and at which they are fastened by the screws f^3. The blank and pattern are held in the chucks by the screws f^4. The shaft is also furnished with an arm, f^5, for rotating the shaft, so as to present the blank and pattern to the cutting mechanism, or to lift them away therefrom, as desired. A pin, f^6, that can be inserted in any of the perforations f^7, serves to hold the arm f^5 at the desired position.

G represents what is termed the "cutter-frame." It supports the cutting mechanism proper, H, and also the pattern-wheel I. The frame consists, mainly, of the arms *g g g g*, united by the bars *g' g'*. The arms *g g*, at their lower ends, are attached to the shaft B, and in such manner that the frame G may have a rotary movement around the shaft, and also be moved along the shaft. The pulley D is arranged between two of the arms *g g*, and is made to be slipped upon the shaft B with the frame G as the latter is moved longitudinally thereon. The shaft B is squared to cause the pulley D to turn with it. Two arms, *h* and *i*, are attached to a shaft, J, that in turn is journaled in the arms *g g* at *j j*.

The cutter H and pattern I are, respectively, journaled in the arms *h i*. The shaft J is furnished with a pulley, *j'*. Motion is communicated to the cutter by means of belts passing from the pulley D to the pulley *j'*, and from the last-named pulley to a pulley, h^1, that is upon the cutter-shaft h^2, as shown in Fig. 3.

The arms *h i*, carrying the cutter and pattern-wheel, are, by properly rotating the shaft J in its bearings *j j*, raised or lowered so as to bring the cutter and pattern-wheel, respectively, in contact with, or to withdraw them from, the blank and pattern. The rotation is effected by means of a screw, K, engaging in a toothed sector, K', that is fastened to the shaft J. The screw K is journaled in bearings *k k*, that are upon the arm *g*, and as the screw, by means of the crank *k'*, is turned in one direction or the other, the cutter and pattern-wheel are correspondingly raised or lowered.

The operation of the mechanism as thus far described is as follows: The pattern and blank being properly adjusted upon the shaft F, and the shaft F being turned so as to properly

present the pattern and blank, the cutter-frame G is moved upon the shaft B, to bring the pattern-wheel and cutter, respectively, opposite the pattern and blank at that end thereof at which it is desired to begin the shaping, and the arms *h i* are raised to bring the wheel and cutter against the pattern and blank. The pattern-wheel follows the outline of the pattern in the usual manner, causing the cutter to give a corresponding shape to the blank. As the cutting proceeds the cutter-frame is suitably slipped on the main shaft, to carry the wheel and cutter transversely past the pattern and blank, in the customary way. For this purpose belts L L′ lead from the pulley E to a series of pulleys, M M^1 M^2, that are upon a shaft, N, that, in turn, is journaled in the uprights at *n n*, one, M, of the pulleys being fast and the others loose.

The shaft N is furnished with a pulley, O, from which a belt leads to a pulley, P, that is upon a screw-shaft, Q. The latter is journaled at *q q*, and is provided with a traveling nut, R. The latter is connected with the frame G, and thus the motion of the shaft B causes the frame G to be fed past the pattern and blank.

S represents the ordinary shifting-bar, by which the belts L L′ are suitably shifted upon the pulleys M M^1 M^2, to change the motion of the frame G, as required.

T represents an arm attached to the frame G, and extended to move along the shaft S as the frame G moves, and to encounter stops n^1 n^2, that are upon the shaft S. This causes the bar S to be shifted at the right time automatically, and to effect a reversal of the movement of the frame G.

U represents an arm that is pivoted to the frame G at *u*, and that at its outer end, u^1, is perforated to receive a screw, V, and that at its inner end, u^2, is slotted and passed over a bar, U′, that, in turn, is held in the uprights *a a*.

W represents a bracket attached to the frame G at *w*. It is threaded at its outer end, in which the screw V engages. By means of the latter the outer end of the arm U can be raised or lowered. When it is desired to make a deeper cut, the outer end, u^1, is drawn upward. This causes the slotted end u^2 to bear upon the bar U′, and, in consequence, to draw the frame G toward the blank. By reversing the movement of the screw V the frame G is drawn backward from the blank. The bar U′ and arm U also prevent the cutter from cutting too deeply into the blank.

I claim—

1. The combination of the shaft F, having the chucks f^1 f^2 and arm f^5, and the uprights *a a*, having the perforations f^7 and pin f^6, substantially as described.

2. The combination of the frame A, shaft B, frame G, arms *h i*, shaft J, screw K, and sector K′, substantially as described.

3. The combination of the shaft B, the tilting and sliding frame G, shaft J, arms *h i*, cutter H, and pattern-wheel I, substantially as described.

4. The combination of the shaft B, the tilting and sliding frame G, shaft J, arms *h i*, cutter H, and pulleys D *j′* h^1, substantially as described.

5. The combination of the rotating shaft F, shaft B, the tilting and sliding frame G, shaft J, and arms *h i*, substantially as described.

6. The combination of the shaft B, frame G, arm U, screw V, bar U′, and bracket W, substantially as described.

7. The combination of the shaft B, frame G, shaft J, arms *h i*, screw K, sector K′, arm U, bar U′, screw V, and bracket W, substantially as described.

ROBERT RICHARDI.

Witnesses:
SOL. J. BLOCH,
ABE BLOCH.