

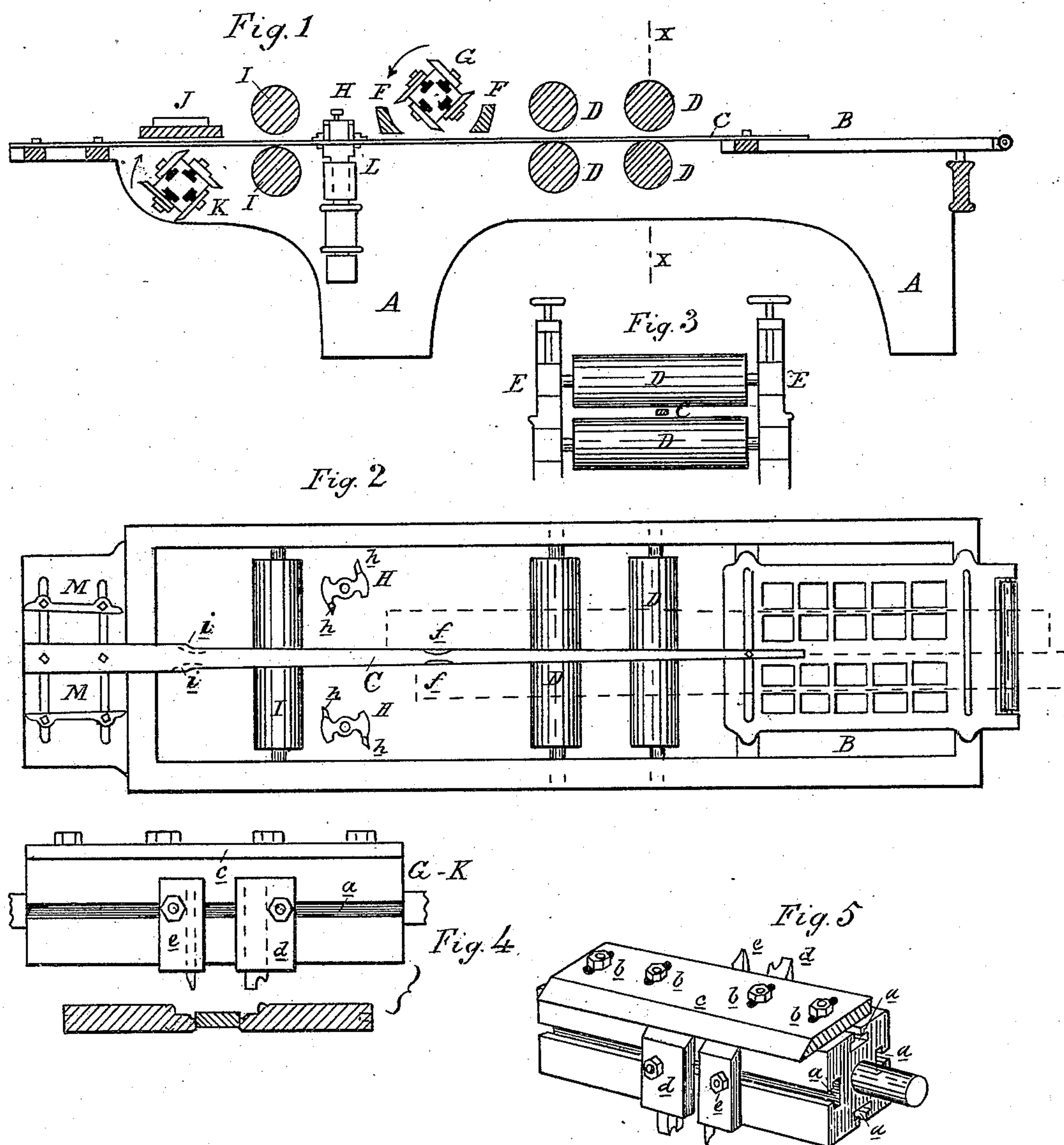
(No Model.)

W. M. DWIGHT.

PLANING AND MATCHING MACHINE.

No. 309,339.

Patented Dec. 16, 1884.



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# UNITED STATES PATENT OFFICE.

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## PLANING AND MATCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 309,339, dated December 16, 1884.

Application filed May 15, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM M. DWIGHT, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful  
5 Improvements in Tongue-and-Grooving Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this  
10 specification.

This invention relates to certain new and useful improvements in the construction and operation of machines for tonguing, grooving, and planing lumber designed for floorings,  
15 ceilings, and other similar purposes.

The invention consists in the peculiar construction of the various parts and their arrangement with relation to each other, and their combinations, by means of which two  
20 pieces of lumber are simultaneously planed, tongued, and grooved, all as more fully hereinafter described.

Figure 1 is a vertical longitudinal central section of my improved machine, showing the  
25 relative position of the parts. Fig. 2 is a top plan of the same with the upper feed-rollers and cutter-head removed. Fig. 3 is a vertical cross-section on the line X X in Fig. 1. Fig. 4 is an elevation of one side of the cutter-head, showing the relative positions of the  
30 beading and tongue cutters, with an end elevation of the two boards under treatment, showing the appearance of the work. Fig. 5 is a perspective view of one of the cutter-heads, (of which there are two employed in  
35 the machine,) showing the relative positions of the planer-knives and beading and tongue cutters.

In the accompanying drawings, which form  
40 a part of this specification, A represents the legs of the machine, supporting a bed, B, both being of the usual construction. Longitudinally and centrally there is secured upon this bed a division guide or fence, C, which is narrow at the entering end of the machine and  
45 gradually grows wider as it approaches the delivery end thereof. This division-guide should be slightly thinner than the boards to be operated upon.

50 D D are pairs of feed-rolls of any of the known constructions, supported at their outer

ends, in the usual way, in standards E, and so arranged in any of the known ways as to be vertically adjustable. These rolls carry the  
lumber under the pressure-bars F and planer-  
55 head G and between the grooving-heads H and the guide or fence to the other pair of feed-rolls, I, which carry the lumber under the pressure-bar J and over the under cutter-head, K.

The two cutter-heads marked G and K, respectively, are alike in their construction; consequently a description of one of them is all that is required in this specification. The  
cutter-head G is rectangular in form, each of  
65 its sides being provided in a line parallel to its axis with T-shaped grooves *a*, by means of which and suitable bolts and nuts, *b*, the plane-irons or cutters *c* are secured to opposite faces of said head.

*d* is the beading and tongue cutter, adapted to form one half of the tongue, while a similar cutter on the under head, K, forms the opposite half of said tongue as the lumber passes  
over said head K. Of course the beading portion of this tool may be omitted, leaving only  
75 the portion which forms the tongue, if desired. There are two of these cutters secured to opposite faces of each of the heads, as  
80 shown in Fig. 5.

*e* is a cutter adapted to finish or round off the top corner of the tongue, a similar tool secured to the under head, K, performing the same office for the under corner. Two of  
these last-named tools are attached to each  
85 head, upon opposite faces of the same. These tools *d* and *e* are secured at a sufficient distance apart, as shown, to straddle the guide C and operate on the edges of the lumber adjacent thereto, and to prevent by any accident  
90 such tools from coming into contact with the guide C, (which is preferably made of iron,) the latter may be slightly cut away on its opposite edges, as at *f*.

The cutter-heads carry the grooving-cutters  
95 *h*, and are secured to vertical shafts L, supported in suitable bearings, as is usually done in machines for the manufacture of flooring, and being, in the usual manner, made laterally adjustable, they can be readily adjusted  
100 to operate on the outer edges of lumber of different widths.



In operation two pieces of lumber of equal width and of equal thickness are fed to the machine in the ordinary manner of feeding one piece, except that one piece is fed on each side of the division-guide and against the same. The feed-rolls carry the lumber forward under the pressure-bars F F and under the head G, (which is driven from any suitable source of power,) when the cutters *c* plane the top surface, the cutter *d* at the same time forming the bead and the upper half of the tongue upon the edge of the board next the guide, and the cutter *e* forming the rounded corner of the tongue upon the edge which is uppermost. The feed-rolls D D, still carrying the two pieces of lumber, next present their outer edges to the action of the groove-cutters, and the lumber is then caught by the next pair of feed-rolls, I, which carry such lumber under the pressure-bar J and over the head K, which is provided with similar cutters, as already described, which will plane the under surface of the lumber and finish the under half of the tongues. As the tongue-finishing cutters *e* have now cut away a slight portion from the edges of said tongues, it becomes necessary to slightly increase the width of the center guide at this point, as shown at *i*. Laterally-adjustable sliding guides M are secured near the delivery end of the machine, (one on each side of the center guide, C, and parallel thereto,) which hold the boards being operated upon in position after they have left the feed-rolls D D.

If it is not desired to plane the under side of the boards, the planer-knives may be left off the head K, only retaining those cutters which form the under side of the tongue. Of course, in order to finish the upper and under parts of the tongue, the position of the cutters *d* and *e* must be transposed on the opposite faces of the head, as shown in Fig. 5. When but one operator is employed to feed the lumber, and as he can feed but one board at a time, one board will have started on its travel over the bed of the machine before the operator can feed another, so that the forward end of the first will be in advance of the other, as shown

in dotted lines in Fig. 2, so that while literally the two boards do not start simultaneously they practically are tongued, grooved, and planed simultaneously.

It can readily be seen that by employing any of the known constructions of the so-called "broken feed-rolls" material of different thicknesses may be simultaneously operated upon.

I am aware that planing-machines have been provided with division-guides, and do not claim such broadly.

I am also aware that it is not new to plane, tongue, and groove a single board and at the same time divide the same so as to form two boards, and do not claim such as my invention.

What I claim as my invention is—

1. A machine, constructed as herein shown and described, to plane one or both surfaces of two boards, and at the same time to tongue and groove the said boards, which are separated and guided by a division-plate, the edges of the boards adjacent to the division-plate being tongued by knives revolving in a vertical plane, the outer edges of the said boards being grooved by cutters revolving in a horizontal plane, the parts being combined and arranged substantially as set forth.

2. In a machine provided with feed-rolls and revolving heads carrying planing-knives, cutters arranged in pairs upon such heads, with a space between each cutter of the pair, whereby two pieces of lumber may be simultaneously operated upon, in combination with a central division-guide, filling the said space between each pair of cutters, substantially as set forth.

3. In a tongue-and-grooving machine, the cutter-head G, carrying cutters or knives *c*, the tongue-forming cutters *d* and *e*, arranged relatively to each other and to the knives *c*, in combination with the grooving-heads H and central division-guide, substantially as described.

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Witnesses:

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