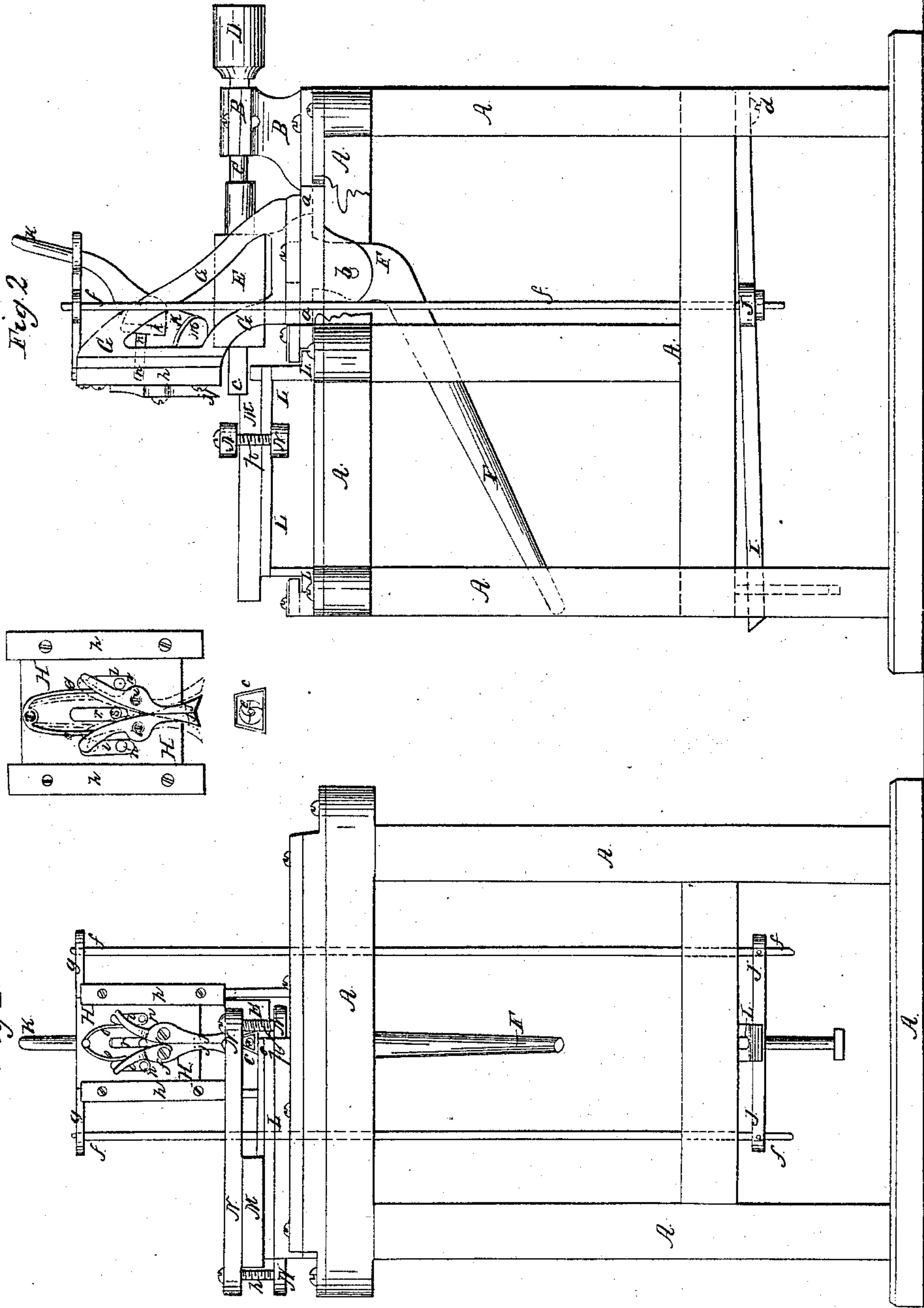


C. Young,

Dovetailing Machine,

No 66,763,

Patented July 16, 1867.



Witnesses.
J. D. Patten
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United States Patent Office.

CALVIN YOUNG, OF AUBURN, NEW YORK.

Letters Patent No. 66,763, dated July 16, 1867.

IMPROVEMENT IN MACHINES FOR CUTTING DOVE-TAILS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CALVIN YOUNG, of Auburn, in the county of Cayuga, and State of New York, have invented certain new and useful improvements in Machines for Cutting Dove-Tails, such as are used in the fronts or backs of drawers, and other similar purposes; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a front view of the machine.

Figure 2 represents a side view or elevation; and

Figure 3 represents the cutting devices, separate from the machine, the spreading of the chisels being shown in red lines.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

I am aware that a hollow chisel with rectangular sides, and a boring instrument working through such hollow chisel, has long been in use. And I am further aware that dove-tails have been sawed in the ends of boards, but such dove-tails extend clear through the wood, and are called open dove-tails, whilst my object is to make secret or closed dove-tails, that is, dove-tails cut into but not through the wood, such as are used in making the fronts and backs of bureaus and other drawers.

And my invention consists, first, in the use of a hollow chisel with bevelled sides, and one or more boring instruments working through the same, so as to cut a trapezoidal shaped opening into the end or edge of a piece of wood, that is, an opening of the form of a plain four-sided figure having two of its opposite sides parallel, and the other two not parallel.

And my invention further consists in the use of a bisected, or of two chisels, which act as one instrument or as two instruments, as the case may be, they being so arranged and controlled as that they may be used as one tool to cut down the square wall of a dove-tail, and then to be spread out and drawn in, so as to clean and cut out the oblique or under-cut walls of the dove-tail.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

On a stand or frame, A, is mounted a box or bearing, B, for supporting a shaft, C, which has a pulley, D, upon it, by which it may be turned by a belt or band from any first moving power, said shaft, beside its revolving motion in said bearing, having also an end motion, for a purpose to be hereafter described. E is a sliding head, which is moved back and forth on or in ways or guides *a*, so as to move in a true line. This head E is moved forward and back by a lever, F, which is pivoted at *b* to a stationary part of the machine, and the short arm of which works in a slot in the under side of the head, so as to freely move it without cramping or straining said head on or in its ways or guides; and the other or long arm of which lever extends forward to or near to the position occupied by the attendant on the machine, so that he may readily grasp and operate it to move the head as may be required. To the front part of this moving head E is connected or adjustably attached a hollow chisel, *c*, the top and bottom of which are parallel, but of unequal lengths, and the sides of which are not parallel, (being bevelled,) but of equal lengths, or of a trapezoidal form, and through this peculiarly-shaped hollow chisel works a boring tool, *e*, which is upon the shaft C, and revolved by said shaft. The chisel *c* may be of the size and form of the end of the dove-tail to be cut, and when the dove-tail has greater length than height, which is generally the case, two or more boring instruments may work in connection with it, each turned by a shaft similar to C, or a series of boring tools may be geared together and operate from a single shaft, or from one belt, in a manner well known to mechanics. The shaft and its auger move back and forth with the head and hollow chisel, and in setting the auger, its cutting lips are flush with the edges of the hollow chisel, or thereabouts, the gimlet point of the auger slightly protruding therefrom. The auger or augers cut away the mass of wood that is removed to form the dove-tail, whilst the chisel gives the square or angular corners to the dove-tail, and the two combined cut or shape four of the sides of the dove-tail, viz, the top, bottom, and sides, but there is a fifth side, or the back wall of the dove-tail, still to be cut out or formed, and this fifth side runs under in both directions, and must be removed by an instrument working in a vertical plane, and without cutting or injuring the overhanging wood. This I accomplish as follows: In the side pieces G I arrange a gate, H,

which can be moved up and down in a vertical plane by means of a lever, I, hung to the main frame at *d*, and which may be operated by the foot of the attendant occupying a position at the front of the machine. To this lever I is attached a cross-head or arm, J, and from each end of this cross-arm J a connecting-rod, *f*, extends up, and is attached to a cross-head, *g*, that carries the gate H, and by means of which connections said gate is moved in its ways or guides *h*. On the front or face of the sliding-gate G are pivoted as at *i i*, two chisels *j j*, which operate as one or two, as the case may be, and as will be explained. As these chisels are brought down by the foot of the operator upon the lever I, they cut down the back wall of the dove-tail; and when the lever is released, it may rise and raise up the gate and chisels by the reaction of a spring. But it is necessary in dressing or cleaning out the corners of the dove-tail, that the chisels should have a lateral motion so as to work under the overhanging wood, and then return to their upright or vertical position, so as to be withdrawn from the dove-tail. This I accomplish as follows: To the rear of the gate is pivoted, as at *m*, a lever, K, which extends upwards, so as to be readily caught and operated by the attendant from his position or stand, and to this lever K is connected (by a slot and pin, or other link or pivoted connection,) a block, *k*, carrying two pins *n n*, which, by the movement of said lever, may be protruded through slots *l l* in said gate, so as to stand in the path of the upper curved ends of the chisels *j j*, and being stationary, the chisels, in passing these studs or pins, are caused to move laterally upon their pivots *i i*, but are returned, immediately after they begin to rise, by the spring *o*, which forces the cutting edges of the chisels together. So long as the pins *n n* are protruded through the gate, the chisels will thus be spread apart, and descend in an oblique manner into and under the corners of the dove-tail, and clean out the excess of wood therein. When the pins are drawn back and out of action, the chisels act as one chisel, rising and falling in a vertical plane without any lateral motion. L is a sliding-table, upon which the piece of wood M that is to be dove-tailed is clamped by the clamps N and screws *p p*. The piece of wood having been moved up into proper position, the lever F is moved down, which brings up the hollow chisel *c* and auger *e* into action, cutting and boring into the end of the piece of wood to the extent for which they had been previously set or adjusted. When, by a single or two or more of such operations, they have removed their share of the wood, they are thrown back out of action, and the chisels *j j* brought into action by the lever I, and which cut down the back wall of the dove-tail, as one instrument, until they have arrived at or near the end of the dove-tail, or where it runs under the overhanging wood. Then the operator, by the lever K, brings the pins *n n* into action, and the chisels are then thrown out laterally, as shown by the red lines in fig. 3, and under-cut or clean out the corners of the dove-tail, immediately after their cutting operation returning to their vertical position by means of the spring *o*. The several adjustments necessary for adapting the machine for making dove-tails larger or smaller need not be mentioned, as such capabilities are obvious and common in many machines. The slot *r* in the sliding-gate H, central between those *l l*, above mentioned, and the pin *s*, protruding and operating therein, is designed for closing the two chisels *j j*, or bringing them together in case the spring *o* should fail to do so.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of a hollow chisel, two of the sides of which are parallel, but of unequal lengths, and the remaining two sides of which are not parallel, but are of equal length, and one or more augers working in or through said hollow chisel, for the purpose of cutting dove-tails, substantially in the manner described.

2. I also claim, in combination with two chisels, whose cutting edges are held together by a spring or yielding attachment, the studs or pins which, when moved into the path of the chisels, cause them to spread laterally for the purpose of cutting down the back wall of a dove-tail, and cleaning out the corners or under-cut portions, substantially as described.

CALVIN YOUNG.

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