J. H. Culver,

Molding Machine.

No. 112,691. Patented Mar. 14. 1871.

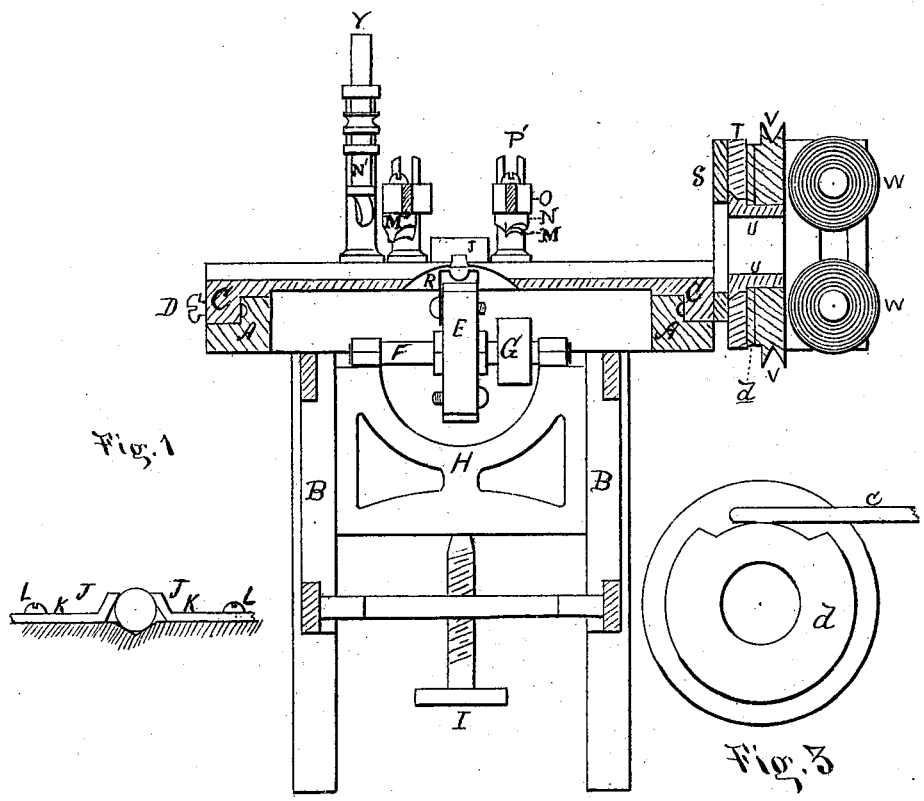
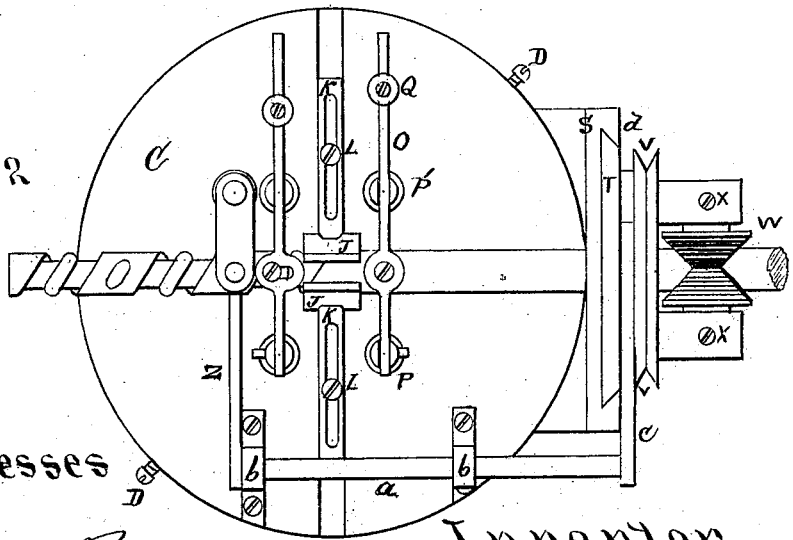


Fig. 1

Fig. 3

Fig. 2



Witnesses

Alfred Lip

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United States Patent Office.

JAMES H. CULVER, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 112,691, dated March 14, 1871.

IMPROVEMENT IN MOLDING-MACHINES.

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

Be it known that I, JAMES H. CULVER, of the city and county of San Francisco and State of California, have invented certain Improvements in Twist or Spiral Molding-Machines, of which the following is a specification.

Figure 1 is a vertical section view of a machine hav- my improvements, the section of the stationary part being in the line of the cutter-shaft, and that of the table in the line of the moldings.

Figure 2 is a plan or top view of the same.

Figure 3 is an end view of the cam and lever of the carving attachment.

Figure 4 is a vertical section view of the guides and their arms.

Figure 5 shows the principle upon which the edge of the cutters should be applied to the timber.

Similar letters indicate the same parts in all the figures.

The body of the machine consists of the annular rim A, supported by the frame B. Upon this rim is placed the flanched circular table C, like a cover, so fitted as to revolve horizontally, carrying on its flanch set-screws D, which fit into a groove in the rim and fix the table in any desired position.

The cutter-head E and pulley G are of the ordinary kind.

The shaft F is journaled upon the frame H, which slides vertically in guides, not shown, and adjustable by the hand-wheel I.

Upon the table C are arranged the two parallel guide-pieces J J, made adjustable to and from each other by the arms K K sliding in dovetailed grooves in the table, and held in place by the set-screws L L working through slots in the arms and into the table, as shown.

M is a thin sharp blade set into nut N, and is adjustable horizontally by a screw shown in the lever O, which lever is pivoted to the post P at one end, while the other end slides vertically in the forked post P', and is held down by the weight Q sliding upon it.

This arrangement of the blade I call the primary feeder, and it is situated on that side of the cutters from which the feed takes place. On the other side of the cutters is a like arrangement, (called the secondary feeder,) except that the blade is thick, dull, and may be made of wood, and the bolt has sufficient play in a slot through the lever transversely to its length to allow of the blade's adjustment between the threads of moldings of different kinds and sizes.

The edge of the cutters R is formed so as to apply to and produce the thread or threads of the twist precisely as the edges of common cutters are formed to apply to and produce the members of straight moldings; that is to say, in my machine the thread of the twist is presented to the cutters in such a manner that the cutters move lengthwise of the thread at the point where the cutting is going on, exactly as they do lengthwise of the members in straight moldings; and as the cutters are made with reference to the cross-section of the members of straight moldings, so they are made in mine with reference to the cross-section of the thread.

The outer and flat side of the cutters should incline as little as possible to the line of motion; for this reason I make the cutters as shown at R in the drawings, forming the required bends, curves, and angles mainly in the plate of the blade itself, instead of mainly in its edge, as in ordinary cutters.

Across the face of the table C, in the line of the guides J J, is a V-groove, in which lies the timber to be worked.

To the edge of the table, at the feed end of this groove, is attached the support S, through which is a hole large enough to admit the largest timber to be worked.

On the outer face of this support moves vertically the slide T, carrying the hub U and grooved pulley V, which is revolved on its own axis by a driving-cord, and is held in place by a flanch running in the slide T, as shown.

To the outer face of this hub and pulley are attached the two concave rollers W, made adjustable to and from each other by screws X working on their journals. Through or by these means rotation is given to the blank cylinder.

It is frequently desirable to leave spaces of greater or lesser width between the threads of the spiral, and to have them broken by a succession of cavities, &c.

This is accomplished by what I term the carving attachment, N', as follows:

On the discharge-side of the table, near the secondary feeder, the carver, consisting of the spindle Y, running on its own axis directly above the V-groove in the table, in arms attached to a supporting-post set back far enough to avoid the molding as it passes, and the lower end N' for any device to be attached. It is revolved horizontally by a belt or cord, in any of the ordinary modes, and is controlled vertically by the forked-crank-arm Z on the shaft *a*, which turns in the boxes *b* set on posts of the proper height above the table to allow the arm Z to be horizontal and clear the molding.

To the other end of the shaft *a* is the corresponding arm *c*, which rests on the cam *d* revolved by the pulley V.

The cam *d* and the cutter on the carver will deter-

mine the character of the carving. The carver is made adjustable in the line of the timber, so as to apply to any desired part of the thread or spaces of the molding. This may be done by uniting Z and *a* by a forked joint, and applying a slot and set-screw to the foot of the post which supports the carver, or by any other of the ordinary means.

The operation is as follows:

The material to be worked must be in the cylindrical form. One end of the blank cylinder is introduced between the rollers W W, which are so adjusted to it as to allow it to lie in the V-groove across the table, and to clasp it with sufficient force to turn it, notwithstanding the resistance of the feed-blades and rollers. The pulley V, being rotated, carries with it the feed-rollers and the cylinder; this gives the desired rotation to the cylinder on its own axis, and at the same time allows it to pass longitudinally between the rollers, with but slight resistance. The primary feed-blade is then adjusted so that, when the cylinder is turned beneath it, the edge of the knife will mark upon it the track of the desired twist or spiral.

As the cutters will indicate the exact distance from thread to thread, the marks of the feed-blade must be the same distance apart. By one or two trials or measurements the adjustment will be perfected.

The table is now to be turned till the line of motion of the cutters corresponds with the line of the thread at the point of their contact, and fastened by the thumb-screws D.

It will be noticed that, by causing the line of the cutter-shaft and that of the cylinder to cross each other diagonally one way, a right-hand screw or spiral will be cut, and by causing them to cross each other the other way, a left-hand one will be cut.

The cutters are next adjusted by the hand-wheel I so as to cut the desired depth into the cylinder, and set into motion.

The cylinder being revolved on its own axis by the rollers W W, as before described, is made to advance along the V-groove in the table by the primary feed-blade being held in the line of the thread and pressed upon the surface of the cylinder by the weight Q, and will present its surface to the cutters in the exact line of the thread which will be formed, as before stated.

As soon as the now-threaded cylinder reaches the secondary feeder, the latter blade can be adjusted between the threads, and thus made to aid the primary feeder till the rear of the cylinder has passed the primary feeder, when the whole feed will be performed by the secondary feeder and the entire cylinder worked through.

I scarcely need mention that more than one thread can be cut as well as a single one by forming the cutters for that purpose.

If the spaces between threads, or the threads themselves, are required to be broken, it can be done by the carving attachment as follows: The carver, being made in any desired form,) being adjusted by the means already described to cut the proper depth and in the proper line, the lever *c* is dropped upon the cam *d*, made in such form as to give the desired form to the carving by raising and lowering the carver.

The carver can be allowed to cut a continuous groove if desired, and this groove may be wavy or zig-zag, by giving the proper lateral motion to the carver.

A great variety of figures, lines, and other ornamentations in imitation of carving can be thus done by any operator having any degree of skill beyond that of a boy.

It will also occur to any good operator that curved moldings may be cut by making some simple modifications in the feed, and also that the machine can be made with the cutters above the timber instead of below.

Having thus described my invention,

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

1. The combination of the rotating rollers W W and feeders M and M′, as and for the purposes herein set forth.

2. The spindle Y, with the carving attachment N′, in combination with the rollers W W and feeders M and M′, as and for the purposes herein recited.

Witnesses: JAMES H. CULVER.

ALFRED RIX,

JAMES DEVOE.