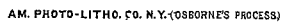


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MACHINE FOR CUTTING VENEERS.

Specification of Letters Patent No. 1,498, dated February 18, 1840.

To all whom it may concern:

Be it known that we, WILLIAM R. GREENLEAF and ALONZO COLE, of the town of Gerry, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Machines for Cutting Veneers, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is a perspective view of the stock with a depression in the same to receive the knife. Fig. 3 is a cross section of the knife and stock as seen in Fig. 1. Fig. 4 another kind of knife with a plain adjustable stock—a cross section and the face being shown. Fig. 5 perspective view of one of the screws, ear, ratchet-wheel, and spring rack. Fig. 6 elevation of one of the divided nuts, circular plate, and arm,—spring and pins—the nuts represented as being disengaged from the screw. Fig. 7 represents a third form of knife without a separate stock. Fig. 8 represents one of the socket set screws for adjusting the knife to the gate and the screw which screws into it.

Similar letters refer to similar parts in the figures.

The frame of this machine consists of two posts, A A, rabbeted on the insides and mortised and tenoned into two parallel sills, B B, and united at top by a cap, C, mortised and tenoned on the top of said posts. The sills are secured together by three cross sills, D D D, also tenoned into the sills B B. In front of the posts is formed a bench, or table, about half the height of the frame, whose sides E E are grooved on the insides to admit two parallel slides G G to which a vertical head block is secured, to move back and forth in said grooves.

The vertical head block F, (to which the piece of timber from which the veneers are to be cut called the "veneer bolt" is secured) is mortised and tenoned to the parallel slides G G which move in the aforesaid grooves—on the insides of the parallel side pieces E E, of the bench. The said head block is perforated with a number of round perforations to admit screws H for holding and adjusting the bolt, some of which are made sharp pointed to enter said bolt and others blunt to press against the rear side of it—so that when it rests firmly on the bench if its side

should not lie flat against the front face of the head block, that said blunt screws may be screwed against the bolt and thus form a firm support for it, without the necessity of sawing or dressing the bolt to fit the right angle formed by the bench and head block.

Two horizontal parallel screws I I pass through the head block near the end thereof extending from the rear to the front side of the bench and arranged for the head block to move over back and forth, having journals on their ends—those on the ends which are from the knife turn in two socket set screws J J, or in short screws with cavities in their points, which screw into and pass through two short standards rising above the top of the bench; and the ends of said large parallel screws I I, which are toward and near the posts of the frame turn in two ears, K K Fig. 5 each divided into two parts and inserted into the sides of said posts of the frame, on the extremities of which screws projecting beyond the ears are fixed ratchet wheels L L. The head block, before described, with the veneer bolt secured to it, is brought toward the knife by means of the two revolving screws I I and a divided nut, or female screw M, M, attached to the head block—one for each screw—which is closed in order to put it into gear with the screw I for moving the head block toward the knife, or opened in order to ungear the nut to allow the head-block to be drawn back, which operations are effected in the following manner—by the means described.

The nut M M' is first made in one piece,—its thread corresponding with the thread of the screw I with which it is to engage;—it is then divided into two equal parts, to each of which a tail piece N is added; and through each tail piece a pin O is passed entering the head block and serving as its fulcrum. From each tail piece there projects horizontally outward a small pin P which enters segment grooves Q Q' in a circular plate R, which turns on a pin, S, passing through its center, into the head block—said circular plate having an arm T extending from its periphery a sufficient distance to give the required purchase for turning it in closing the parts of the nut, as hereafter described; and from the extremity of which there projects horizontally, outward, a short handle U by which said arm is moved around and the circular plate turned on said center

pins S, when it is required to close the nut. To gear the divided nut M with the horizontal screw I, lay hold of the handle U and move it around till it be above the top of the head block; then secure the arm in the position represented in the drawing Fig. 1 by means of a notched bar, W, moving around horizontally on a vertical pin X inserted into the top of the head block—the vertical circular plate will thus be turned in a manner to close the parts of the divided nut, (which have a movement like a pair of pincers) and grip the screw I and thus become engaged, or in gear, therewith;—and at the same time a spring Y, connected by one of its ends to the head block and its other end resting on a pin V projecting horizontally from the circular plate is contracted or bent back by said movement of the circular plate;—then when the notched bar is pushed around and disengaged upon the arm, (which is effected by a part Z of said notched bar, turned at right angles, striking against the fender post A when the head block has advanced as far as it is intended that it should go, the circular plate is instantly thrown around to its former position by the action of said spring in endeavoring to extend or straighten itself; which operation throws asunder the parts of the nut and thus disengages them from the screw.

There is a similar divided nut, circular grooved plate and arm, right angled notched bar, spring, pins, &c., to those just described arranged and applied to the other large horizontal screw I in like manner, which screw in the perspective view Fig. 1 is hid by the slide G' but is represented in Figs. 5 and 6. When the nuts are both in gear with the screws II and the screws are turned the head block, with the veneer bolt will move toward the knife.

The screws II are turned in the following manner. To the knife gate are attached two spring racks *a, a*, by means of screws, *b b*, passed through oblong slots *c c* in the upper ends of the racks—the teeth of said racks being made hooking upward. Now, as the gate descends to make a cut the racks slip over the teeth of the ratchet wheels without turning them, but when the gate ascends the teeth of the racks take hold of the teeth of the ratchet wheels, turn them around as far as the set of the racks will permit—thus causing the screws I to turn and the head block F to move toward the knife;—and should it be necessary to advance the head block farther, in order to cut a thicker veneer the screws *b* must be loosened and the spring racks *a* raised on the shanks of the screws and these must be again tightened, which will cause more teeth of the racks to act on the ratchet wheels, and of course to turn the screws II, to which they are attached, a greater distance around and of course to

advance the head block a farther distance forward.

The following is another mode of turning the screws which may be adopted if preferred. The racks for turning the ratchet wheels may be hung on pins so as to have a pendulous movement, and as the gate descends to fall back into grooves, or recesses, in the sides of the gate out of the way of contact with the ratchet wheels; and when the gate ascends they are thrown out so as to gear with the ratchet wheels by means of cams attached to the fender posts against which the racks strike.

The gate to which the cutting knife is secured consists of two parallel vertical slides *d d* connected together by three cross timbers mortised and tenoned into them—the lower one is placed horizontally—the other two obliquely or inclined at the same angle with the required position of the knife. The side and inclined pieces of the gate are recessed, or cut away, to admit the casting forming the stocks for holding the knife which, is secured therein by screws.

The knife *e* is made of the best cast steel and iron, concave on the back side in order to bring the knife to a quick cutting edge without weakening the blade, from which edge it rises in front vertically nearly half its width forming the front face which will be toward the “veneer bolt”;—it then slopes back at an angle of about thirty five degrees; extending at that angle a distance a little more than the width of the front face, with the last mentioned inclined line it forms a right angle until it meets the curve line, or concave side of the knife—the last mentioned straight line may be considered the back of the knife. A suitable number of perforations are made through the knife to admit the screws for securing it to the stock and in said stock there are also perforations for screws *h* which secure the stock to the gate; which screws are screwed into socket set screws passing through the gate by which the knife stock, is secured and adjusted to the gate. By turning these socket set screws to the right the upper edge of the stock is receded from the gate, and by turning them to the left it is advanced toward the gate and receded from the bolt, thus setting the face of the knife. Fig. 8 is one of said socket set screws. *h* is the screw screwed into the socket screw. The point of the socket set screw rests against the back of the plate;—the said plate being held or gripped between the head of screw *h* and the point of the socket set screw.

The stock *f* is made of cast iron, with a depression *g* in it corresponding with the outline of the upper part of the knife, just described, which fits snugly therein, with the back of the knife resting firmly against a part of the stock which forms a shoulder *h*

with apertures *i* in said stock corresponding with those in the knife to admit the screws which pass through the knife into said stock. The upper part of the stock forms a plain

5 rectangular plate; which is screwed to the gate by screws *k*, which pass through the stock and screw into the socket set screws, which pass through the gate from the back side—said screws *k* being for the purpose
10 of securing the stock to said socket set screws, so that by turning the set screws in female screws in the gate the upper part of the stock is moved to or from the gate.

The back of the knife stock at *f* Fig. 3
15 projects at right angles to the plate; it then turns down and forms the shoulder before described for the back of the knife to rest against as shown at *h h*; and from this shoulder the casting runs off along the back of
20 the knife to a sharp edge where it reaches the front face of the knife—being sloped at the same angle with the sloped part of the knife which fits against this part of the stock.

25 The ends *o* of the stock extend down below the cutting edge of the knife and are firmly braced by brackets which stand at right angles to the plate for strengthening the stock.

30 We sometimes use another kind of knife instead of that above described. It consists of a flat blade *p* Fig. 4 straight on the front face and concave on the back face with a sharp cast steel cutting edge—its end pro-
35 jecting down below the cutting edge and the blade near the upper edge or back is perforated with a number of holes for screws which secure it to the gate and also with oblong slots *q* near the cutting edge to admit
40 screw bolts *r* for securing it to a rectangular cast iron stock *s* for strengthening the blade; and which stock rests against the under side of the upper inclined cross piece of the gate; and the holes for the screws that secure it
45 to the gate are in the same position as those in the plate of the stock of the other knife. The slots are for the purpose of allowing the casting to be raised as the edge of the knife wears the under side of the inclined cross
50 piece of the gate being cut away to allow it to be thus raised. This knife is fastened to the gate in the same manner that the stock of the former knife is secured and is adjusted in the same manner.

55 For cutting very thin veneers and when the knife is required to perform its office without any vibration or yielding we make it very thick, strong, and broad on the back so as not to need a stock for strengthening
60 it. This knife is made vertical on the front face—concave on the back face—and horizontal on the top which forms the back through which it is perforated vertically for screws that secure it to the under side of
65 the lower inclined cross piece of the gate:

the ends are turned at right angles to the front face forming flanges and perforated for screw bolts which screw them to the insides of the gate.

Fig. 7 represents a perspective view and a
70 cross section of this kind of knife in which it is the vertical or front face—*u* is the concave or back face—*v* is the top or back—*w w* are the flanges.

The movement of the gate should be regu-
75 lar and not too fast and may be effected by attaching the connecting rod of the gate to the back of a large bevel wheel *m*, near the periphery thereof, which is turned by a small bevel pinion, *n*, into which the large
80 one works having on its axle a drum around which passes a band leading from the driving power which may be steam, water, horse or manual—and when the latter power is
85 used a simple lever will be sufficient to move the gate.

It is no doubt well known that veneers are generally cut from cross grained, or curled stuff, very thin, and that it is abso-
90 lutely necessary to have them perfectly true or even to be of any use, and therefore a knife for cutting them must not only possess a fine cutting edge, but must also be made extremely stiff and unyielding, and must be
95 held firmly to the gate. We are well aware that machines with sliding gates and knives for cutting shingles, staves, and other kinds of thin stuff are in use; but they are not
100 capable of cutting the kind of veneers referred to, in consequence of the knives not being sufficiently stiff, or unyielding; in this respect we believe our machine differs very
105 essentially from all others; and also in the construction of the feeding works; in both respects the desired object is obtained in a cheap, simple, and easy manner.

In the use of this machine there is no loss of stuff in cutting the veneers; whereas in the use of the saw, the saw-calf, where it is
110 sawed, is as thick as the veneer itself and consequently one half of the stuff is wasted. And the saving of stuff is certainly an object since it is only the most costly and beautiful woods that are cut into veneer. The expedi-
115 tious manner in which veneers are cut with this machine also give it an advantage over other machines. It is found by actual experiment that one of our machines (with a steaming apparatus for softening the wood)
120 will cut more than sixteen thousand superficial feet in twelve hours. Its simplicity and cheapness are also among its advantages. A good machine sufficient to cut stuff three feet and a half long can be built for
125 fifty dollars, whereas a machine for sawing veneers costs from three to five hundred dollars. And the small quantity of power required to operate this machine may also be mentioned, being not more than one horse,
130 and even a single man can operate it by

means of a lever. The veneers cut in this machine being quite smooth will therefore require but little dressing and are easily laid.

What we claim as our invention and desire to secure by Letters Patent consists—

1. The mode of adjusting and holding the veneer bolt by means of the sharp pointed screws which pass through the head block and enter the bolt, and the blunt screws
10 which turn against the back of the bolt as before described.

2. The mode of bringing forward the bolt to the knife by means of the combination and arrangement of the large horizontal
15 parallel screws and ratchet wheels on the ends thereof, the divided nuts, circular

plates, arms, and notched bars attached to the head block, and the spring racks attached to the knife gate for turning the ratchet wheels and screws as the gate ascends 20 for bringing forward the head block with the veneer bolt to the knife as before described.

3. The mode herein described of setting the knife by means of the socket set screws, 25 one of which is seen at Fig. 8.

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Witnesses:

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