

G. Bishop.

Cutting Veneers.

No. 1,590.

Patented Sept. 21, 1858

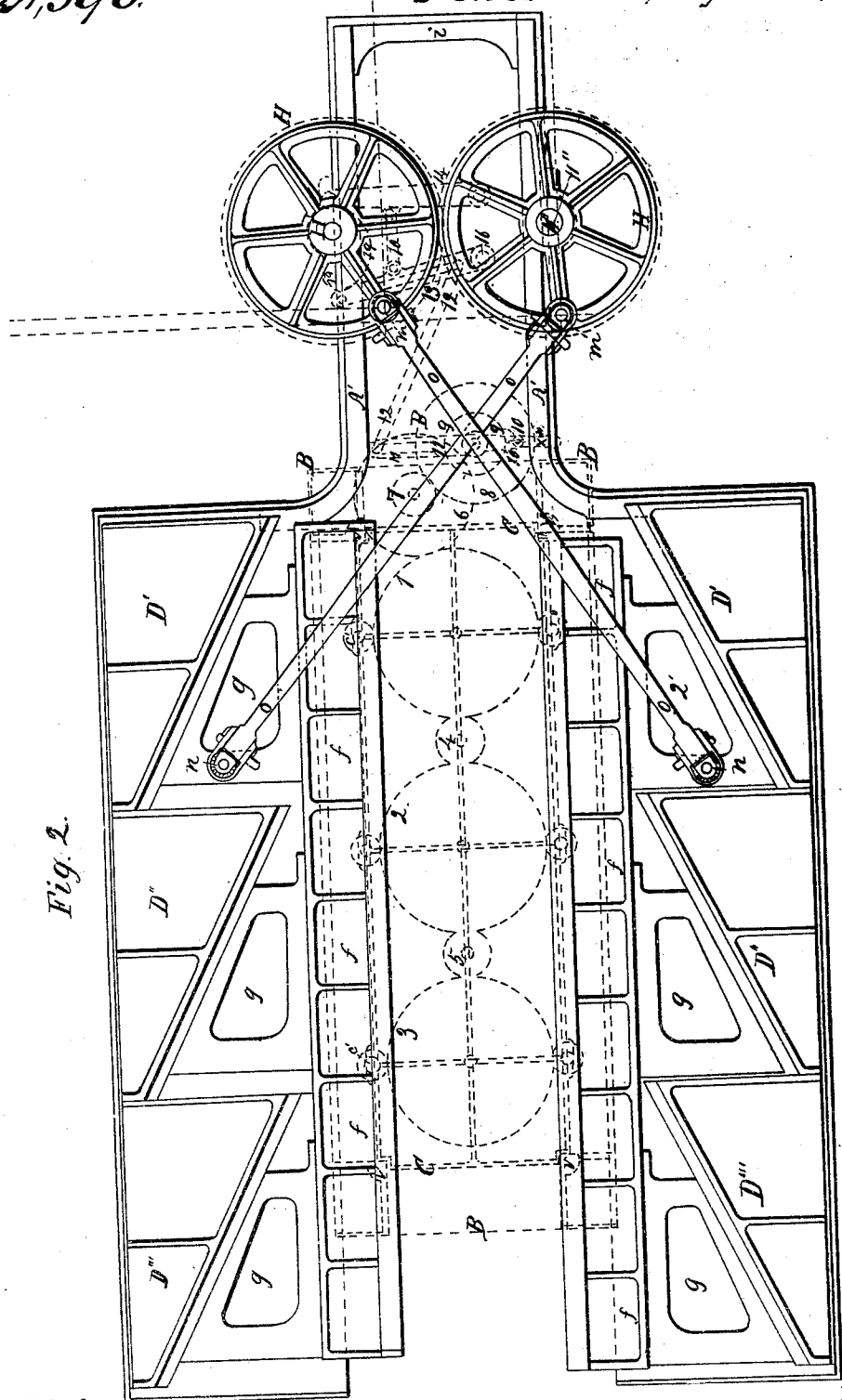


Fig. 2.

Witnesses.

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MACHINE FOR CUTTING VENEERS.

Specification of Letters Patent No. 21,590, dated September 21, 1858.

To all whom it may concern:

Be it known that I, GILBERT BISHOP, of the town of Fairfield, in the State of Connecticut, mechanical engineer, have invented new and useful Improvements in Machinery for Cutting Veneers; and I do hereby declare the following to be a full and exact description of my said improvements and machinery, reference being had to the drawings accompanying and making part of this my specification.

These improvements relate to a novel construction and arrangement of the knives with reference to the log, and the means by which they are operated, and consist chiefly in the use of two knives arranged and operating so as to cut or shave the veneer, each knife through half the space of the veneer and meeting in the center, and so that each knife will make its cut or stroke with evenness in the same plane, the edges of the knives being opposite each other with the log between; thus cutting the veneer from both sides in the direction of the grain of the wood or log; whereby the veneer is less liable to be roughed or broken by the action or thrust of the knife.

The machine (which is adapted to cutting veneers from such woods as are commonly used for veneers, and which while in the log must be steamed in a suitable box by the use of steam and hot water combined, unless the log is a very soft or green wood) is shown in the accompanying drawings, in which—

Figure I, is a side or longitudinal elevation of the machine. Fig. II, is a top view or plan and a partial horizontal cross section. Fig. III, is an end elevation. Fig. IV, is an elevation of the end opposite the last mentioned.

In all the figures the same letters or figures represent the same parts.

The frame work of the machine is composed of two cast iron bedplates A, A, placed and firmly secured upon strong foundations of masonry; and these two bed plates are arranged parallel to each other with a sufficient space between them for the log carrier or carriage B, upon which is placed the elevator or follower C, which holds the log while the veneer is cut, and by the feed apparatus attached to which the log is fed or adjusted up to the knives.

The bed plates A, A, are extended out in

one direction beyond the end of the log carriage, so as to form, in continuation, a strong supporting frame for the driving and operating wheels; this last mentioned part of the frame being shown at A', A'. Upon the bed plates, are placed the vertical side-frames of iron, D', D'', D''', each set consisting of three pieces, the two sets of which on either side are parallel to each other. These are to be bolted or otherwise fastened to the bed plate by bolts or keys so as to be adjustable for purposes hereinafter set forth.

The log-carriage B, is a frame work of iron and is placed below the space between the two bed plates. In this log-carriage is placed the gearing wheels for working the feed screws *c, c, c*, Figs. I, IV. This carriage extends through the space between the bed plates A A. It is movable on sliding or ways, upon which are grooves to which the under side of the carriage is fitted, and upon which ways, the carriage with the follower and log, and the feed screws are slid out or back when desired, for placing, or adjusting the log, or other purposes.

Above the log-carriage is placed the elevator or follower C, upon which the log is laid and fastened and by which it is held and fed, while being cut into veneers. This elevator is shown in its place, (a side elevation) in Fig. I, at C, C, and a surface view is seen in Fig. II, and an end view in Fig. IV, with the log placed upon it. It is supported and elevated or lowered by the vertical side screws *c, c, c*,—three on each side, having their bearings in the carriage frame underneath, and the heads of which support the elevator and are secured in the box plates or top-pieces fitted to receive them, as shown at *c', c', c'*. For securing the log to the follower, horizontal screws are placed across the follower which have upon them dogs or clamps, which by turning the screws will be made to bite or tightly hold the log upon the elevator, and having its upper edge between the knives is shown in an end elevation, in Fig. IV, the elevator C, being raised part way up upon the screws.

For cutting, or shaving-off, the veneer, I use two knives or planes placed on either side of log, in the same plane with each other, and so that in operating their edges cut in the same plane. The position of the

two knives is shown in an end view in Fig. IV, at *e, e*. The knives must be very true and even and of sufficient length to cut the longest log that the carriage will receive.

5 The under surface of the knives is flat, and the blade increases in thickness from the edge by an easy curve toward the back; the back of the knife forms a right angle with the under surface. The knife is provided

10 with a knife-stock, *d*, into a recess into which it is fitted, so as that the under surfaces of both are on the same level, and the knife is secured to the stock by screws underneath, countersunk, and by which screws

15 the position of the knives can be adjusted with nice accuracy. The knife stock is secured to the triangular metal knife-frames *f, f*, which serve further to afford strength and steady action to the knives; the exterior

20 faces of the frames are diagonal in line with the external surfaces of the knife and knife-stock so as to raise and clear the veneer as it is cut gently and uniformly from the log. The frames are secured by screw bolts to

25 the movable iron slides *g', g, g*, three in number on either side attached to each knife frame, and their form is shown in plan in Fig. II, and in end elevation in Fig. IV; they need not be solid but may be cast in

30 open pattern as shown in Fig. II. They, with the knife and stock and frame attached, are suspended to the vertical faces of the side frames or blocks *D', D'', D'''*, each side to its corresponding side-block or

35 guide by means of two dove-tail joints to each set, as seen in Fig. IV, at *i, i*. These side pieces or guide blocks have their vertical faces on the side toward the log, placed diagonally to the sides of the log, and to the

40 edge of the knife, and the diagonal faces of each set are on parallels, approaching nearer to the log at the point toward which the knives are drawn while cutting. These

45 guide blocks or side pieces are so bolted to the bed plates by adjustable screw bolts and slots, that the angle of the diagonal can be increased or diminished, and thereby to increase or diminish the thrust or play of the

50 knife, as it may be desired to have the stroke quicker or slower. Each of the three sliding frames are connected together by the knife stock and frame, so that when one moves, the three must move at the same time

55 the same distance. The knives are operated, and the log, fed up to the knives, and the cutting of the veneer performed, as follows. Upon that part of the main frame of the machine which

60 is at the end toward which the knives are drawn when cutting, and which is shown at *A'*, Figs. I, III, are placed side by side, the two horizontal toothed wheels *H, H*, geared together and whose surfaces are on a level with the surfaces of the first pair of slide

65 frames *g, g*. The wheels *H, H*, revolve upon

and with the vertical spindles *H', H''*, (Figs. II, III,) having their supports in journal boxes *h, h*, secured to the main frame and turning upon bearings in the pedestal blocks, *l, l*. Upon the spindle *H''*, 70 is fixed the bevel toothed wheel *J*, (Fig. III,) geared with the corresponding toothed wheel *K*, whose shaft is driven by a prime mover, not necessary to be shown. The wheels *H, H*, are of the same diameter and 75 one being driven by the other move together with the same velocity in different directions. Upon the upper surface of the rim of each of the wheels *H, H*, is placed the crank pin *m*; and upon the top of each of 80 the movable slides *g', g'*, before described, is placed a corresponding pin *n, n*. A connecting rod *o, o*, connects the pin *m*, with the pin *n*, on the opposite side, whereby the two connecting rods cross each other, one 85 being hung a little higher than the other so as to work without interference; by these connections, the rotating of the wheels *H, H*, gives a reciprocating action to the three slides *g', g, g*, on either side, through the 90 knife frames or backs *f, f, f*, to which the knife stock and knife are fixed, by which means, and the diagonals above described the knives are thrust forward and outward, and the reverse. The pin *m*, upon one of 95 the wheels *H*, is set a little in advance position of the pin on the other wheel by which means the frames and knife on one side are kept a little in advance stroke of the other; so that the knife which is in advance will 100 perform its stroke and begin to recede, just before the other knife completes its stroke, and thus cuts the veneer clear off, so as to render impossible any collision of the two 105 knife edges.

The feeding or adjustment of the log up to the knives for each cut of the veneer is provided for as follows. In the log carriage *B*, between the upper and lower plates constituting part of the frame of the 110 carriage are placed the three horizontal spur wheels 1, 2, 3, (shown in blue Fig. II,) having their bearings in the plates of the carriage; these three wheels are geared together by the intermediate pinions 4, 5. 115 Upon each side of the log carriage are three vertical screws *c, c, c*, of the same size, thread, and pitch, passing through the log carriage, the heads of which screws abut and are secured in the box plates fastened 120 to the follower above at *c', c', c'*, as before described. Upon each of the three screws *c, c, c*, is placed a screw-nut *c''*, (Fig. I,) toothed and geared into the toothed wheels 1, 2, 3. Near the end of the log-carriage is 125 placed the horizontal spur-wheel 6, which gears into spur wheel 1, and has upon its axle the pinion 7, (Fig. II.) By the side of pinion 7, is placed a little in advance the horizontal spur wheel 8, which gears into 130

pinion 7. Neither of the wheels 7, and 8, have their bearings in the log carriage but are placed upon a plate or bed distinct from and a little lower than the carriage, and secured to the part of the main frame marked A'. Upon the axis of wheel 8, is placed the ratchet wheel 9, into the teeth of which the double pawl 10, catches and operates, and which pawl works upon and is secured to the flat bar or arm 11, and which arm 11, works upon the axis of wheel 8, to which it is secured. The arm 11, has a slot at one end, to which is attached, (so as to be adjustable upon it) the end of a connecting bar or rod, the opposite end of which is secured to a pin in a slot (so as to be adjustable) in the arm 13. This arm 13, is one of a pair (13 and 14,) which are secured to and work upon pivots at one end fixed in a pedestal or block resting upon the bottom plate—the pivots being shown at 16, 17. The two arms 13, 14 are secured together by the cross bar 18. Upon the spindle H', is fixed the toe or cam 19, (Fig. II,) having its sides curving to a point, and which as it revolves with the spindle H', alternately comes in contact with arms 13, and 14, by which a reciprocating motion is given to the arms at each revolution of the spindle, and which reciprocating causes the arms 11, to vibrate, by means of connecting rod 12: this causes the pawl to act upon the teeth of the ratchet 9, just at the commencement of each stroke, and the turning of the ratchet acts upon 7, 6, 1, 4, 2, 5, 3, and thus upon the toothed nuts c'', which elevate the screws c, c, c, attached to the follower, upon which the log is placed, so as to feed the log up at each stroke of the knife, and just at its commencement. The slots above described and pins in 11, and 13, permit the connecting bar 12, to be adjusted so as to give a longer or shorter vibration to the arm 11, as may be desired, and thereby to adjust and regulate the amount of feed or elevation of the log, to the required thickness of the veneer. The toe or cam 19, is also adjustable upon the spindle, by a key or wedge.

The manner of securing and fixing the knives to the knife stocks by the screws heretofore described, admits of the nicest adjustment of the knives to each other; a piece or pieces of paper interposed between the knife and stock will answer the desired object; and thus the knives shall be set so as to cut straight and smooth across the log, with an even surface upon the veneer and log.

Having described the various parts of the machine, and the manner of connecting them together and mode of operation, it only remains to describe the manner of fixing and adjusting the log upon the follower.

(At each corner of the log carriage are upright triangular shaped pieces V, V, V, V, which fit into corresponding recesses or notches in the corners of the elevator, and the pieces V, V, V, V, act as guides and conductors of the elevator.) For adjusting the log upon the elevator, the carriage is drawn out back from between the knives, by being slid out upon the ways before described: the log is then placed directly upon the center line of the elevator so as to be equally distant from the two knives: the horizontal screws working the clamps or dogs at the sides of the elevator are screwed up so as to grasp the lower edge of the log; the feed screws c, c, c, are adjusted so as to bring the surface of the log to the level of the edges of the knives: the log carriage is slid back to its place: and the feed apparatus being adjusted according to the thickness of the veneer required, the wheels H, H, being put in motion, the cutting is carried on until the log is consumed; when the running of the machine must be stopped.

By means of the handle x to the double pawl 10, the pawl is made to operate upon the one side of the ratchet or the other, and thus the nuts which adjust the screws c, c, c, made to turn forward or backward, so as to elevate, or lower the elevator; an arm with a projecting point to catch upon the handle, holds the pawl with one or the other tooth to the ratchet as desired; this guide or stop is seen at y.

Having thus described my improvements and the manner of operating the same what I claim as my invention therein and for which I desire Letters Patent, is—

1. The cutting of veneers from opposite sides of the log by knives arranged and operating in opposite directions so as to cut with the grain of the wood.

2. The construction and arrangement of the diagonally faced side pieces D', D'', D''', and the sliding frames g', g, g, in connection with the knives so as to give the thrust of the knives into the center of the log, and thus cut the veneer clear from the log.

3. The arrangement of the wheels H, H, in combination and connection with the sliding frames and knives so as to produce the drawing cut, at the same time that the knives are being thrust in upon the log.

4. The combination and arrangement of cam 19, the pair of bars 13, 14, the connecting rod 12, and vibrating arm 11, and pawl and ratchet, so as to operate in the manner described to raise or lower the feed screws.

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Witnesses:

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