H. S. SMITH.

Machine for Cutting Veneers.

No. 207,628. Patented Sept. 3, 1878.

Fig.1.

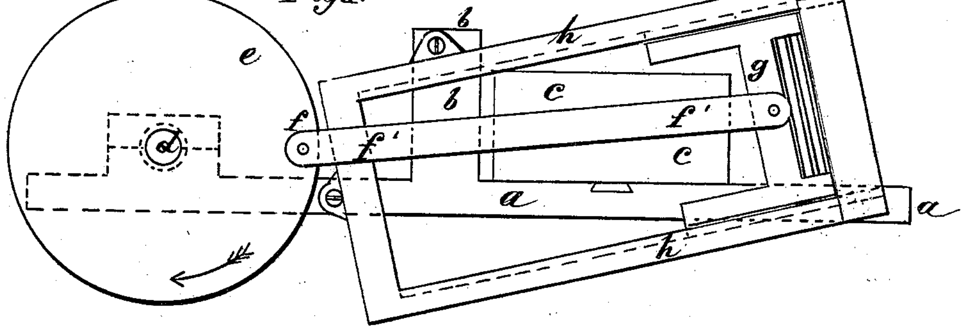


Fig.2.

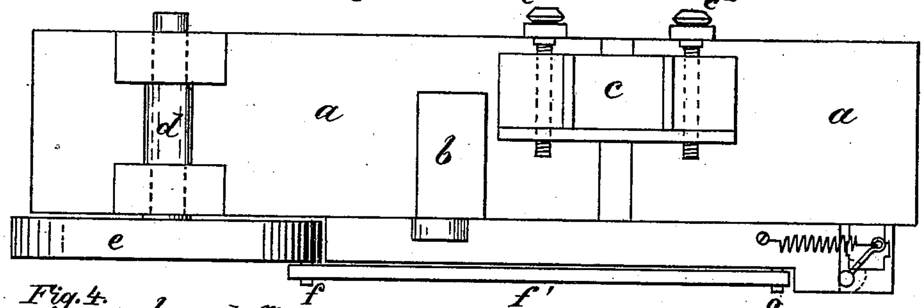


Fig.4.

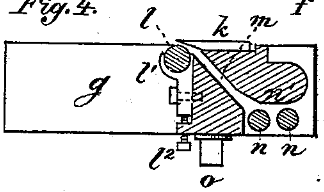


Fig.3.

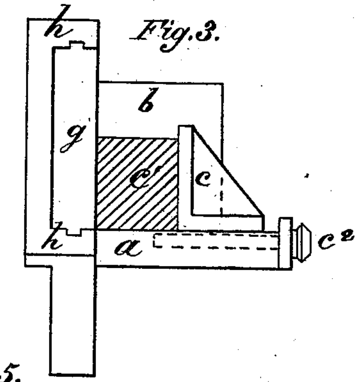
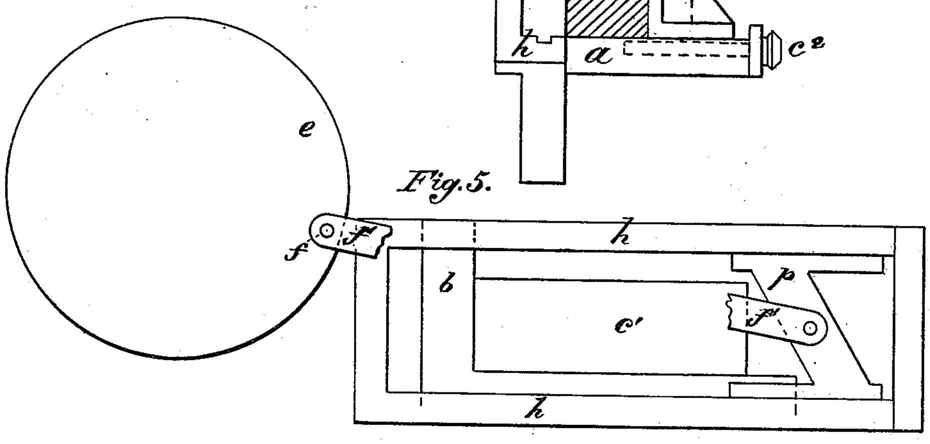


Fig.5.



Witnesses:
F. H. Schott
J. C. Taske

Inventor:
Heman S Smith

2 Sheets—Sheet 2.

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Fig. 6

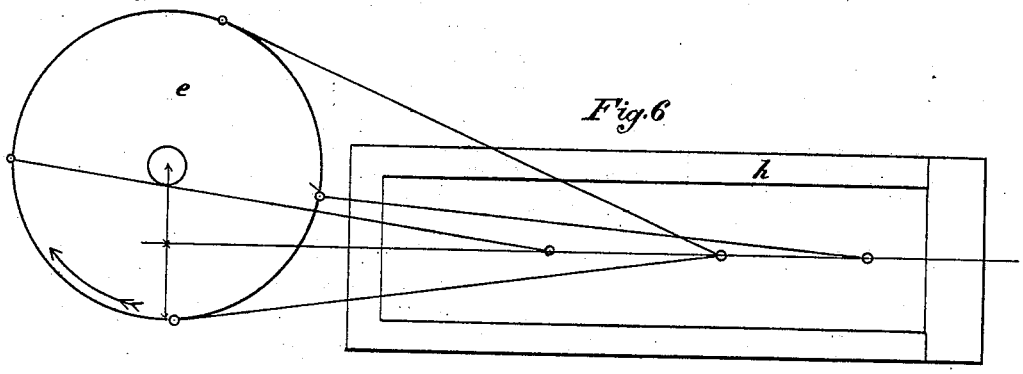


Fig. 8.

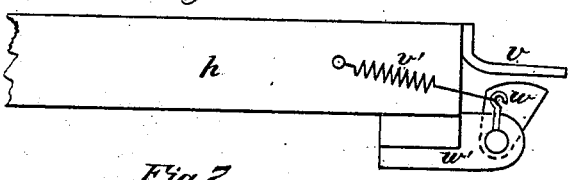
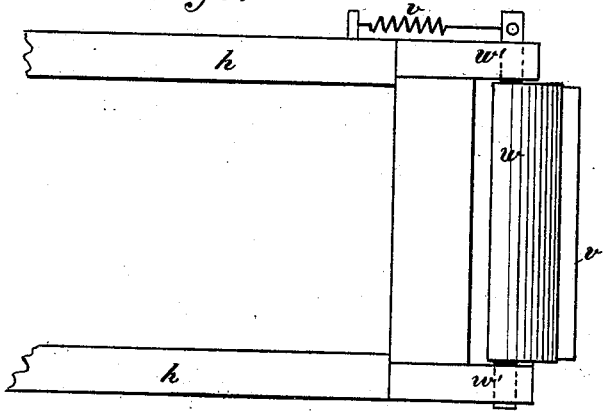


Fig. 7.



Witnesses:
F. H. Schott.
J. C. Tasker

Inventor:
Hiram S. Smith

UNITED STATES PATENT OFFICE.

HEMAN S. SMITH, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINES FOR CUTTING VENEERS.

Specification forming part of Letters Patent No. **207,628**, dated September 3, 1878; application filed February 25, 1878.

To all whom it may concern:

Be it known that I, HEMAN S. SMITH, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Cutting Thin Lumber; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention has reference to improvements in those machines in which veneers or thin boards are cut from a log by a reciprocating or slicing knife, the object being to so construct the machine as to render it capable of cutting sound veneers, free from checks, with a minimum amount of power.

Heretofore these machines were so constructed as to pass the knife across the log, the edge of the knife generally traveling at right angles to the grain of the log. This, in many cases, causes the grain of the veneer or board to crack and break, particularly in cutting thick stuff, and requires a long knife, at least as long as the log, and consequently heavy machinery and great power to operate it.

My improvements consist in constructing the machine so as to run the knife either in the direction of the grain of the wood or diagonally thereto; and in the application of a pressure roller or bar to the reciprocating knife-carriage opposite the edge of the knife, which must be so adjusted as to bear hard against the log while the knife is cutting, in connection with one or more rollers in the rear of the knife-carriage and attached thereto, for the purpose of straightening the veneer or board as it comes off the log; also in an application of certain mechanism attached to the end of the ways in which the knife-carriage slides, for clamping the board and extricating it from between the knife and the pressure roller.

Figure 1 represents a front view of my improved machine, some parts being omitted, which will hereinafter be shown and described; Fig. 2, a plan view of that part of the machine shown in Fig. 1; Fig. 3, an end view thereof; Fig. 4, a section through the knife-carriage; Fig. 5, a modification of the construction, showing the knife-carriage inclined and traveling on horizontal ways; Fig. 6, a diagram, illustrating the action of the connecting-rod upon the cutter-carriage, derived from placing the shaft of the crank which gives motion to the knife-slide above the center-line between the ways; Figs. 7 and 8, front and plan views of my attachment for removing the cut veneer or board from between the knife and press-roller.

In Figs. 1, 2, and 3, *a* represents the bed-plate of the machine; *b*, a strong upright cast with the bed-plate or fastened upon it; *c*, the stay-log of the machine. *d* is the main shaft, which carries a large wheel, *e*, the circumference of which may be furnished with cogs, which gear into a pinion not shown in the drawing, by which the wheel *e* can be made to rotate. This wheel *e* carries a crank-pin, *f*, by means of which and a connecting-rod, *f'*, a reciprocating motion is given to the knife slide or carriage *g*, which runs in ways *h h* firmly fastened to the front of the machine, but in such a manner as to lead the knife-slide in a diagonal direction to the longitudinal axis of the log. The log (shown in Fig. 3 by letter c^1) is placed upon the bed-plate of the machine, with one end abutting against the upright *b*, so as to resist the pressure of the knife while cutting, and is secured to the stay-log *c*, by which it is fed up against the knife, by two feed-screws, c^2 c^2, which receive their intermittent motion by some automatically-operating mechanism connected with the driving-shaft of the machine, but not shown in the drawings. The knife-slide *g* is shown in section in Fig. 4, *k* being the knife, secured to the body of the knife-slide, with its flat side toward the log, by countersunk screws or bolts. Opposite the edge of the knife, and running the whole length thereof, is a roller or press-bar, *l*, supported in proper bearings l^1, made adjustable to and from the knife and log by set-screws l^2. *m* is the throat, through which the veneer passes as it comes from the knife. *n n* are two rollers, and *n'* a varying inclined surface opposite these rollers. The veneer, as it comes from the throat *m*, is forced through between these rollers *n n* and the varying inclined surface *n'*, where it is straightened, for which purpose these rollers *n n* may be made adjustable

toward or from the surface n'. For the stationary surface n' a series of rollers may be substituted with good effect, as they would relieve the knife-carriage from much frictional strain. o is the pin in front of the knife-slide, to which the connecting-rod f' is jointed, and by which the knife-slide receives its reciprocating motion.

Instead of running the knife in a diagonal direction, as above described, it may be run in a direction parallel to the platform of the machine and to the grain of the log. The knife should in this case be set at an oblique angle to the direction of its travel, as shown in Fig. 5, in which p is the knife-slide; h, the ways in which it travels; c^1, the log to be cut, and b the upright for the log to abut against; f', the connecting-rod which gives motion to the knife-slide. In all these figures the knife-slide is represented as being operated by a crank-motion. This, however, is not absolutely necessary, as the reciprocating motion of the knife-slide may be obtained by rack and pinion, or a screw arranged similarly to the mechanism of an iron-planing machine; or it may be produced by direct action of steam against a piston inclosed in a steam-cylinder. But when the crank-motion is employed, as shown in the drawings, it will be observed that I place the crank-shaft above the center-line of the ways about half the radius of the crank, for the purpose of producing as near a straight pull as possible while the knife is cutting, as while the knife is returning it is doing no work, and the connecting-rod may push the knife-slide at any angle. This is fully demonstrated in the diagram, Fig. 6.

When the knife has finished a cut the end of the veneer or board remains stuck fast between the bevel of the knife and the pressure-rollers l, and it is desirable to have some automatic mechanism to extricate the same, so that it can be taken away. For this purpose the mechanism shown in Figs. 7 and 8 may be employed. It consists of a cam or eccentric, w, supported in bearings w', which are attached to the rear ends of the ways h and stationary surface v, also fastened to the ends of the ways. The cam w and the stationary surface acting in conjunction form a clamp, which permits the veneer to pass from left to right without much hindrance, but which will clamp it tight as soon as the knife-slide commences to return for a new cut. The clamp holds firmly, and thus extricates the veneer from the knife-slide. A light spring, v', serves to keep the clamp pressed against the surface of the veneer, which is enabled to pass through in one direction, but not in the other. The cam, however, may be operated by some automatic motion obtained from the main shaft of the machine, or any other suitable part thereof, so as to open and shut at the proper time.

In this machine the movement of the knife while cutting, being diagonal to the axia lline of the log, will cause the side of the log to bear firmly upon the bed and its end against the head-block of the machine. By this diagonal movement of the knife in cutting the fiber of the wood is simply bent, and not shaken, as in the ordinary process of cutting such material.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. In a veneer-cutting machine, a knife-slide, in combination with the knife and press-roller.

2. In a veneer-machine, a knife-slide having attached to it two or more rollers, for the purpose of straightening the veneer as it comes from the knife.

3. In a veneer-cutting machine, the automatic mechanism for extricating the veneer from the knife-slide, consisting in a combination of the cam w and the stationary surface v, operated substantially as and for the purpose specified.

4. In a veneer-cutting machine, the knife-slide provided with the cutting-knife and pressure-roller, and two or more rollers for straightening the veneer as it comes from the knife, in combination with the cam w and surface v, for extricating the veneer from the knife-slide, substantially as specified.

In testimony whereof I have hereunto affixed my signature this 25th day of February, 1878, in presence of two witnesses.

HEMAN S. SMITH.

Witnesses:
FRED. E. TASKER,
A. MOORE.