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No. 858,568. PATENTED JULY 2, 1907.

A. BROSIUS.

VENEER CUTTING MACHINE.

APPLICATION FILED JULY 30, 1906.

7 SHEETS—SHEET 1.

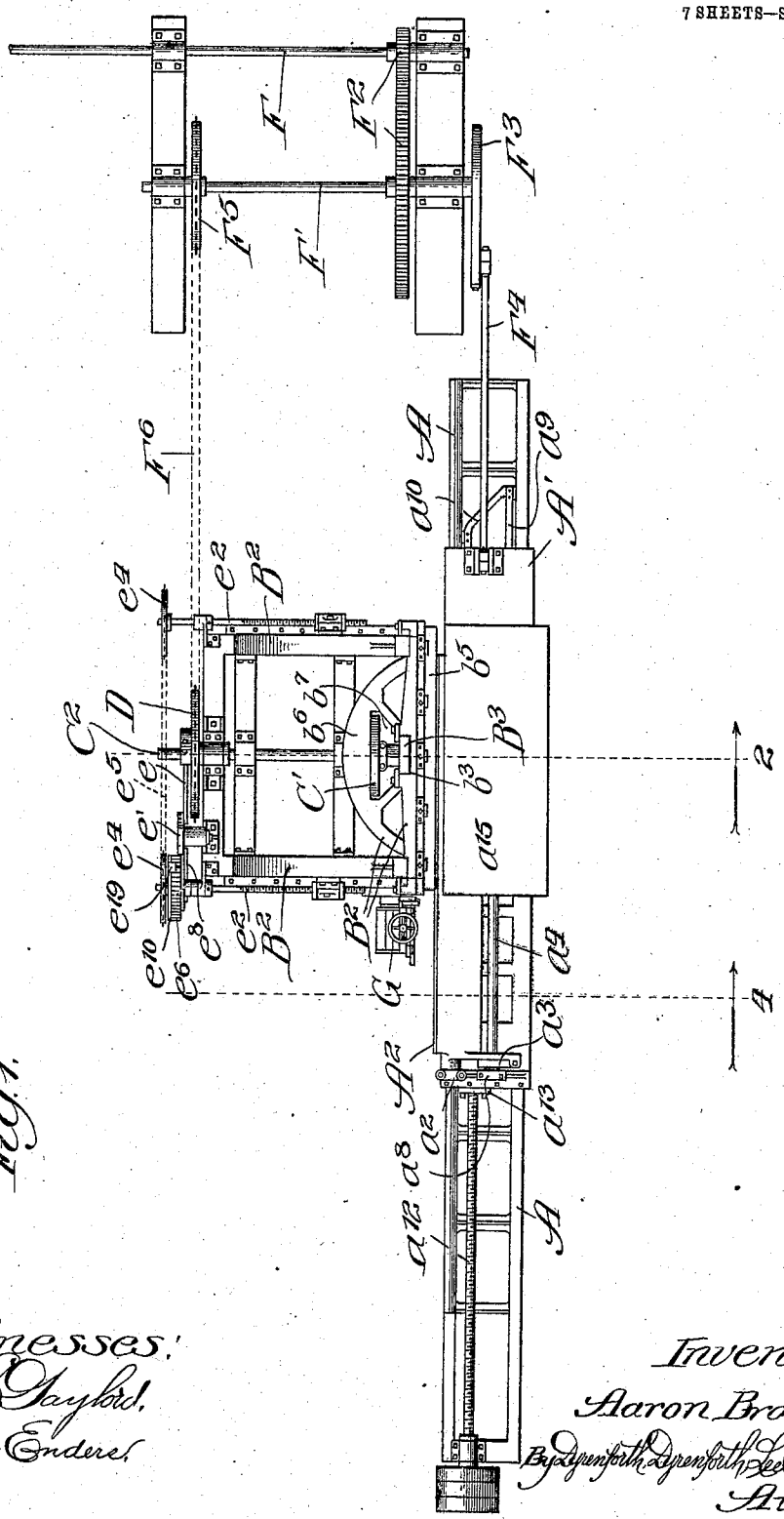


Fig. 1.

Witnesses:
C. C. Gaylord.
John Enders.

Inventor:
Aaron Brosius,
By Dyrenforth, Dyrenforth, Lee & Wiles,
Attys.

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Fig. 2.

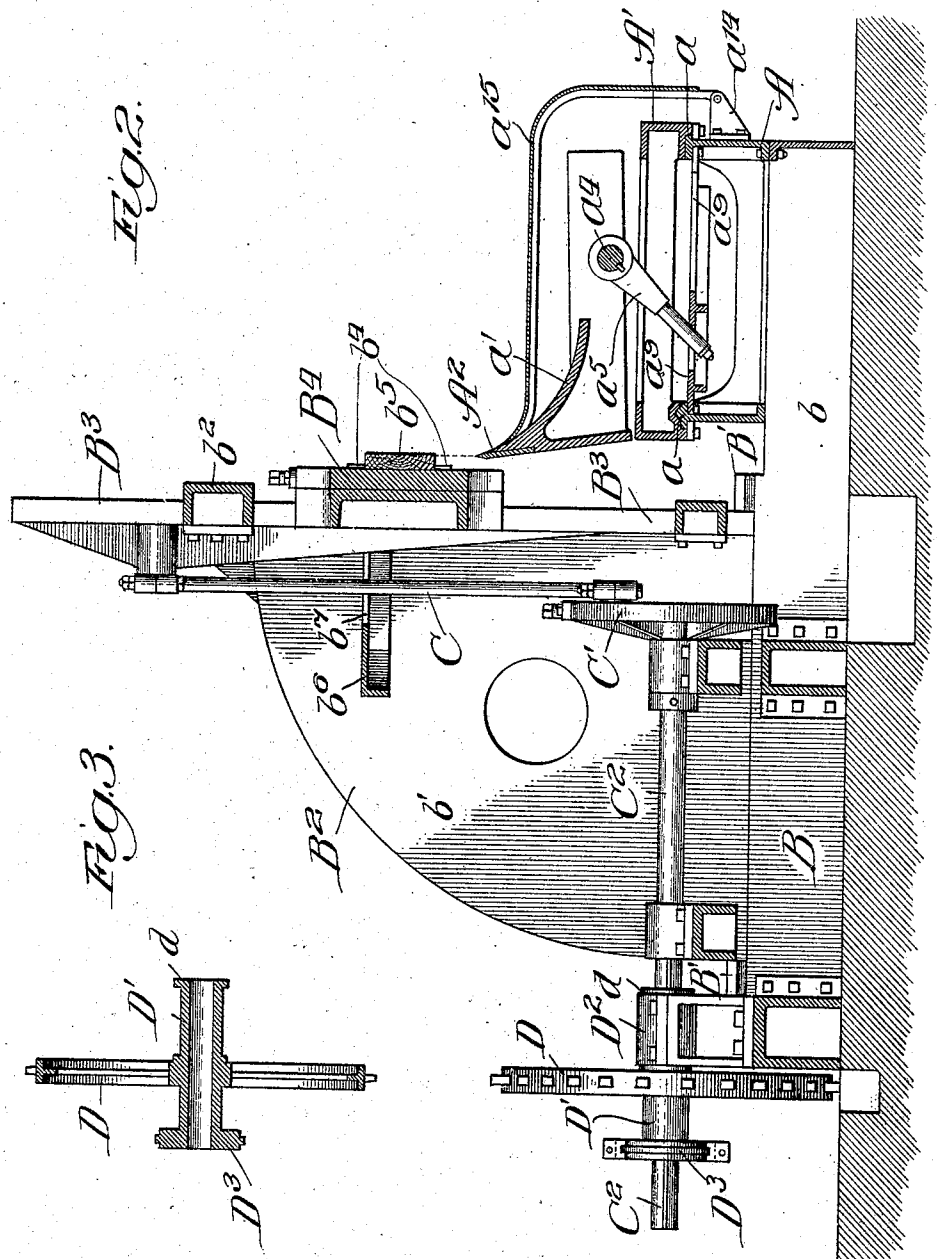


Fig. 3.

Witnesses:
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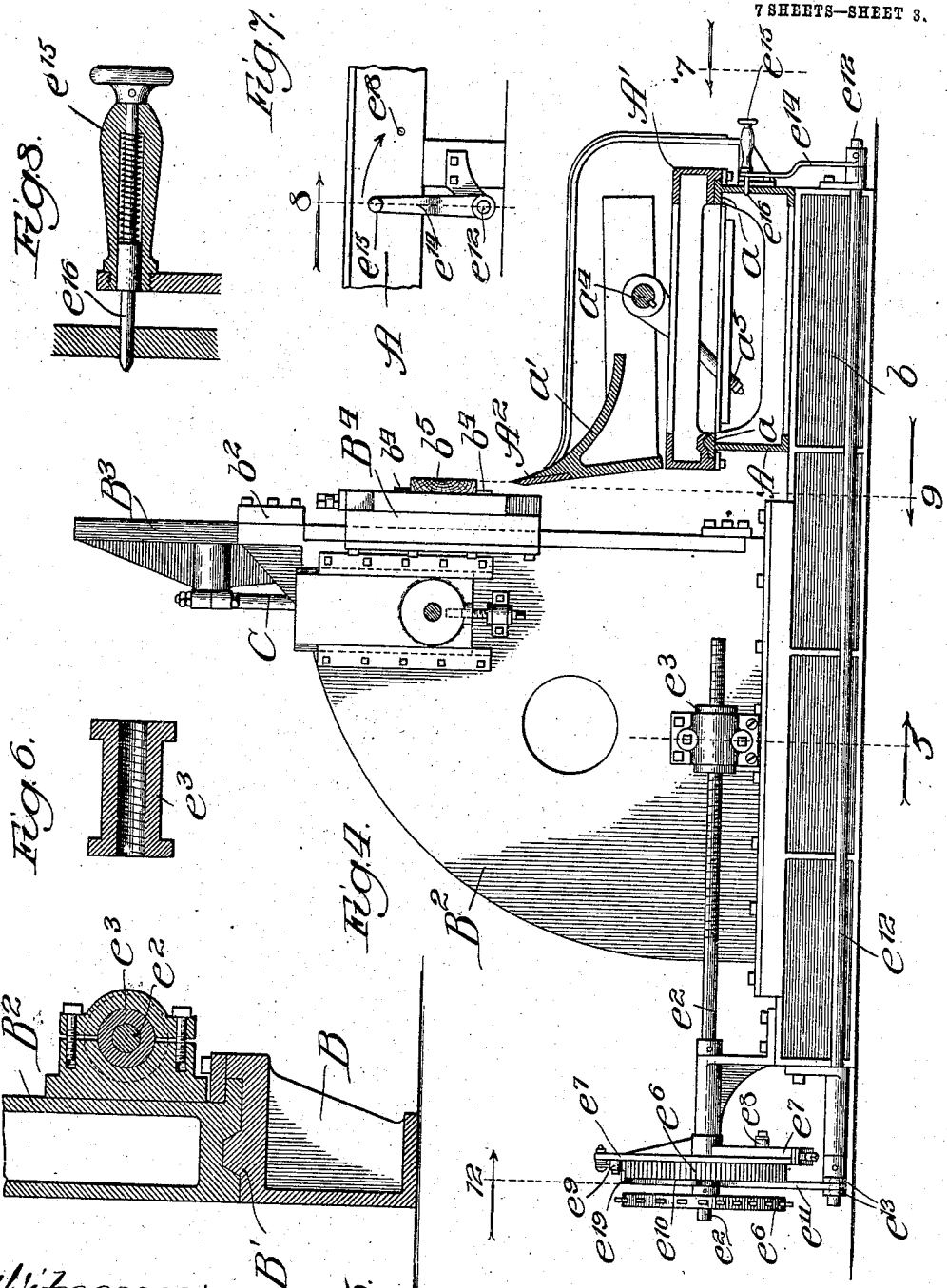
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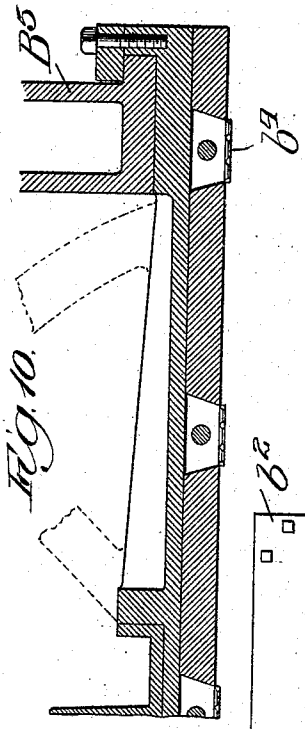


Fig. 10.

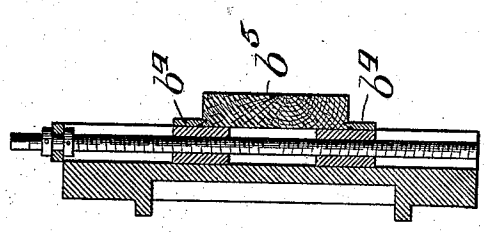


Fig. 11.

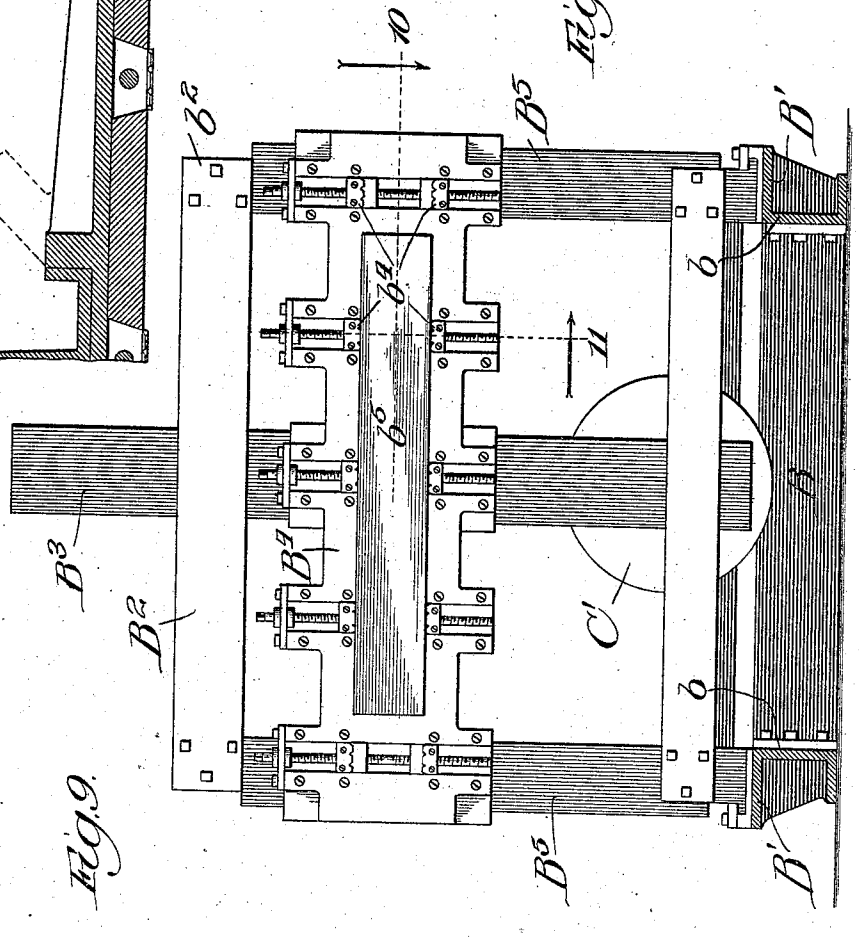


Fig. 9.

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Fig. 12.

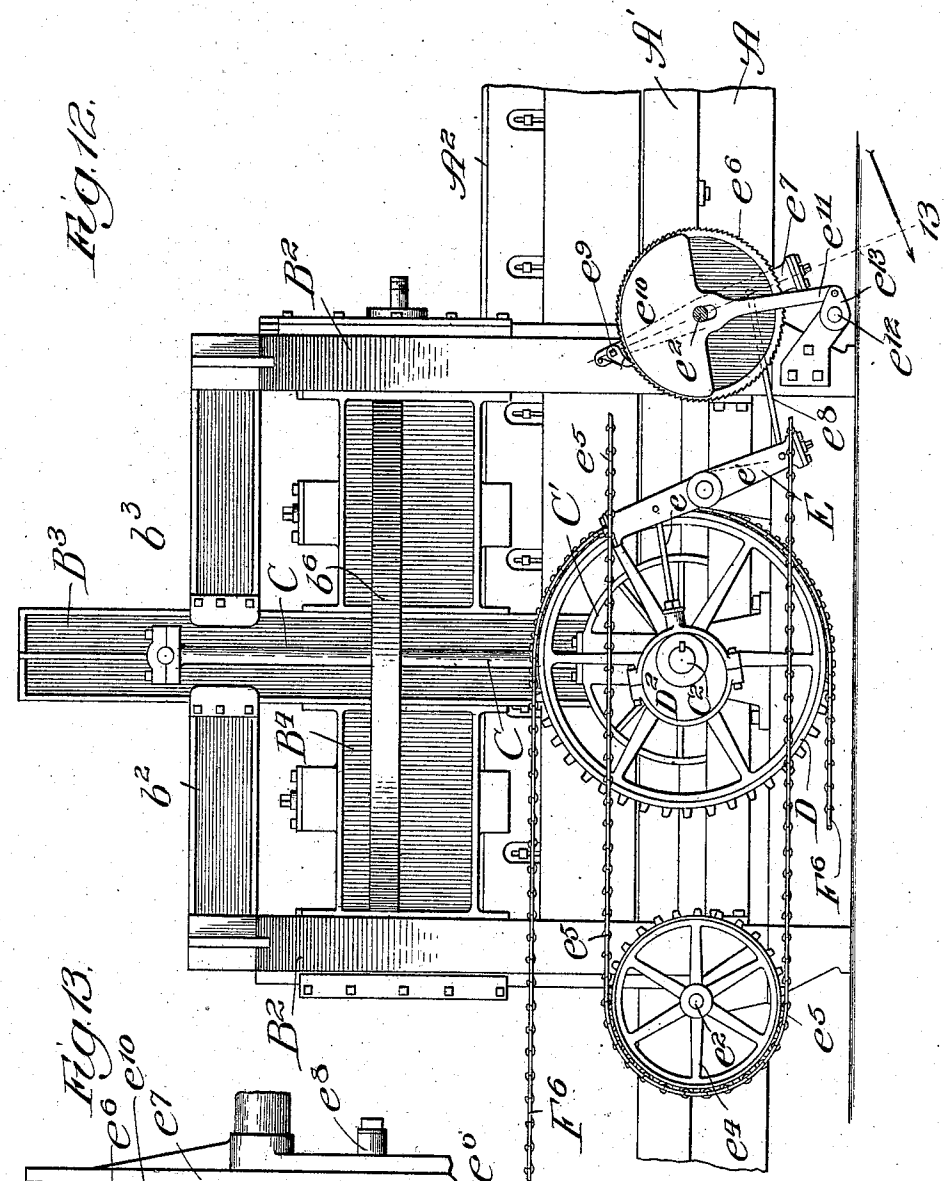
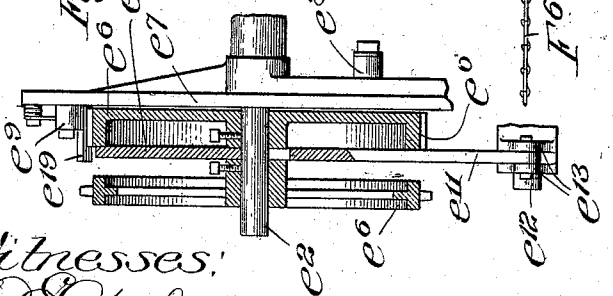


Fig. 13.



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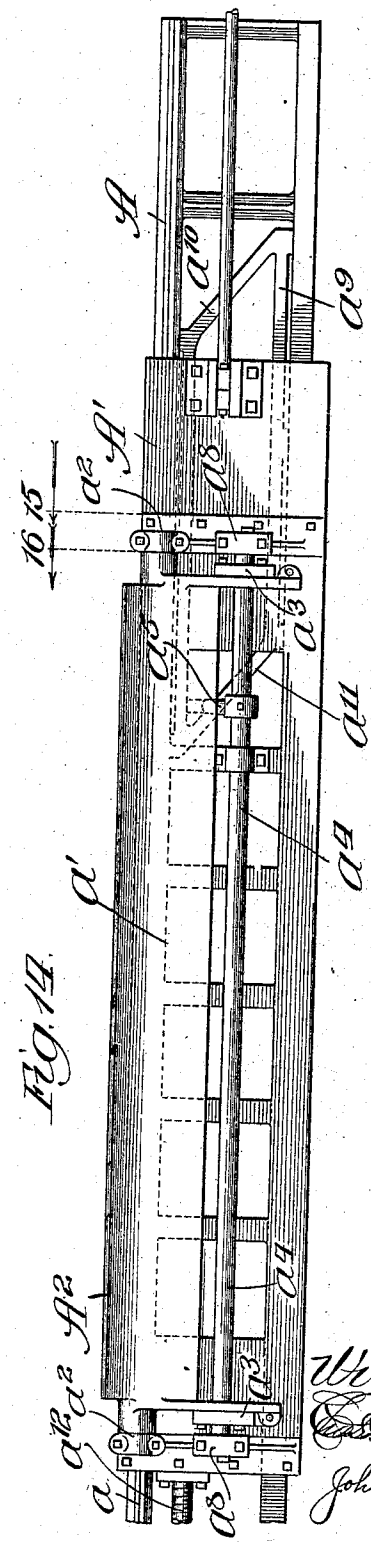


FIG. 14.

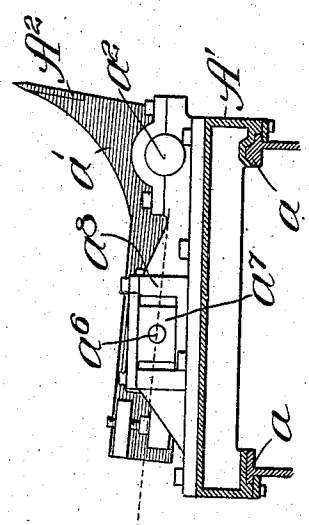


FIG. 15.

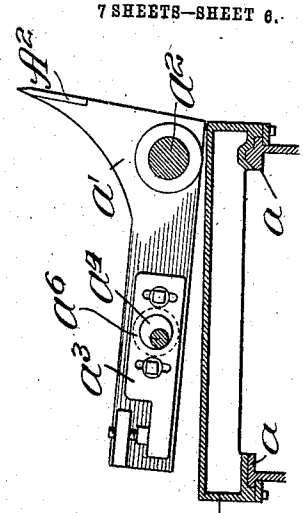


FIG. 16.

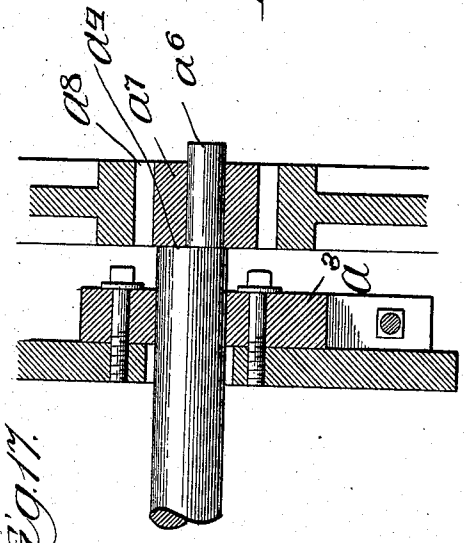


FIG. 17.

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7 SHEETS—SHEET 7.

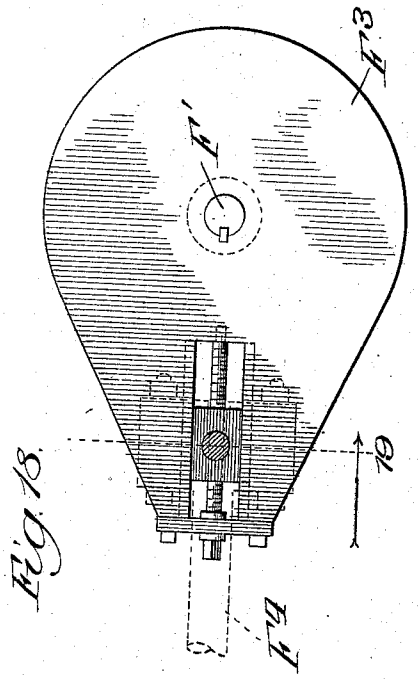


Fig. 18.

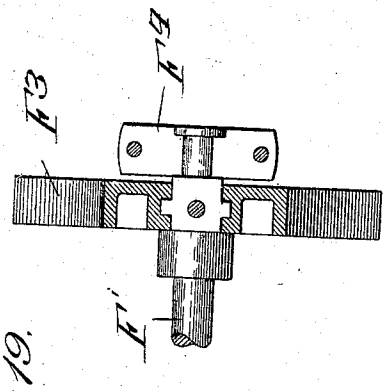


Fig. 19.

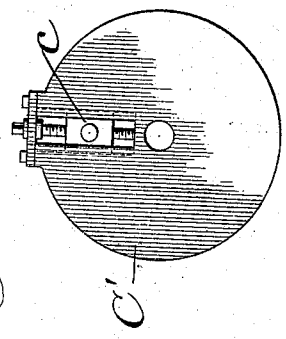


Fig. 20.

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UNITED STATES PATENT OFFICE.

AARON BROSIUS, OF EVANSVILLE, INDIANA, ASSIGNOR OF ONE-HALF TO LOUIS F. NONNAST, OF CHICAGO, ILLINOIS.

VENEER-CUTTING MACHINE.

No. 858,568. Specification of Letters Patent. Patented July 2, 1907.

Application filed July 30, 1906, Serial No. 328,364.

To all whom it may concern:

Be it known that I, AARON BROSIUS, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented a new and useful Improvement in Veneer-Cutting Machines, of which the following is a specification.

My invention relates particularly to veneer-cutting machines involving the use of a knife for cutting the veneers.

My primary object is to provide a machine capable of cutting veneers without injury to the same, the machine being capable of producing veneers without waste of stock.

My invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 represents a plan view of my improved veneer-cutting machine; Fig. 2, a section on an enlarged scale taken as indicated at line 2 of Fig. 1; Fig. 3, a sectional view of a sprocket-wheel and eccentric employed in the construction; Fig. 4, a sectional view taken as indicated at line 4 of Fig. 1; Fig. 5, an enlarged broken section taken as indicated at line 5 of Fig. 4; Fig. 6, a sectional view of the bushing shown in Fig. 5; Fig. 7, a broken view taken as indicated at line 7 of Fig. 4 and showing a detail of means for stopping the feed of the stay-log employed; Fig. 8, an enlarged broken section taken as indicated at line 8 of Fig. 7; Fig. 9, a section taken as indicated at line 9 of Fig. 4, and showing the front face of the stay-log; Fig. 10, a broken section taken as indicated at line 10 of Fig. 9; Fig. 11, a section taken as indicated at line 11 of Fig. 9; Fig. 12, a broken rear elevational view of the machine; Fig. 13 a broken section taken as indicated at line 13 of Fig. 12, and showing details of the means for feeding said log toward the longitudinally reciprocating knife employed; Fig. 14, a plan view of the reciprocating knife-carriage and its bed, or guide; Fig. 15, a section taken as indicated at line 15 of Fig. 14; Fig. 16, a section taken as indicated at line 16 of Fig. 14; Fig. 17, a section taken as indicated at line 17 of Fig. 15; Fig. 18, a view showing the connection between the connecting-rod of the reciprocating knife-carriage and the shaft which actuates the connecting-rod; Fig. 19, a section taken as indicated at line 19 of Fig. 18; and Fig. 20, a detail of the connection between the connecting-rod of the vertically reciprocating stay-log and the shaft which actuates the same.

In the construction illustrated, A represents a bed, or guide, upon which is mounted a reciprocating knife-carriage A^1 equipped with a knife A^2; B, a frame which supports the bed A and is equipped with guides B^1 at right angles to the guides of the carriage A^1; B^2, a frame mounted to move on the guides B^1 toward and away from the carriage A^1, in a direction at right angles to the direction of movement of the carriage A^1; B^3, a vertically reciprocating cross-head carrying a stay-log B^4 moving upon vertical guides B^5 with which the frame B^2 is provided; C, a connecting-rod joined to the cross-head B^3 and actuated by a wheel C^1 fixed to the front end of a horizontal shaft C^2 mounted in a bearing with which the frame B^2 is equipped; D, a sprocket-wheel having a sleeve D^1 journaled in a bearing D^2 with which the frame B is provided, said sleeve being splined on the shaft C^2 which is movable longitudinally within it, and said sleeve being equipped at its rear end with an eccentric D^3; E, feed-mechanism actuated by the eccentric D^3 and serving to feed the frame B^2 and the stay-log carried thereby toward the knife A^2; F, a shaft through which power is communicated to the machine from any suitable source; F^1, a counter-shaft joined by gears F^2 to the shaft F; F^3, a crank-wheel secured on one end of the shaft F^1 and joined by a connecting-rod F^4 to the carriage A^1; F^5, a sprocket-wheel fixed on the shaft F^1 near its rear end and joined by a chain F^6 to the sprocket-wheel D.

The carriage A^1 is connected with the bed A by guides a of a character to prevent the carriage from being raised or lifted from its bed. The knife A^2 is supported on a member a^1 of angular cross-section, which is connected at its lower front portion by pivots a^2 to the main body of the carriage A^1. The rear portion of the member a^1 is equipped at its ends with adjustable bearings a^3 in which is journaled a rock-shaft a^4 equipped with a cam-arm a^5. On the ends of the rock-shaft a^4 are eccentrically placed crank-pins a^6 which are journaled in shiftable blocks a^7 confined in guides a^8 with which the main body of the carriage A^1 is equipped. The cam-arm a^5 projects into the path of a cam a^9 having oblique cam-surfaces a^{10}, a^{11} whose function it is to tilt the knife toward the flitch when the carriage returns to begin a working stroke, and to tilt the knife away from the flitch preparatory to the carriage making its return movement. The bed A is equipped with a threaded shaft a^{12} which works in a detachable nut a^{13} connected with the carriage A^1. The threaded shaft is employed to impart a slow feed to the carriage when it is desired to grind the knife, during which operation the carriage is disconnected from the crank-wheel F^3. During the use of the machine for cutting veneers, the nut a^{13} is disconnected from the carriage, and the carriage is connected with the crank-arm, or wheel, F^3. The carriage A^1 is equipped at its front side with lugs a^{14} upon which is pivoted a shield, or guard, a^{15} which extends upwardly and rearwardly over the member a^1 of the carriage and bears against said member adjacent to the knife A^2. The veneers, as they are cut from the flitch, fall upon the guard a^{15}.

The construction of the frame B may be varied. This

frame preferably has two forwardly extending members b which form the guides for the shiftable frame B^2 and which project forwardly in front of the plane of the stay-log a sufficient distance to permit the bed A to be mounted thereon. The frame B^2 is in the form of a housing having side members b^1 and a connecting member b^2 at the top, the member b^2 having a guide b^3 for the cross-head B^3. The stay-log comprises a bar having a flat front face and equipped with adjustable clamping members b^4, which serve to secure the flitch, or stock, b^5 in place. The stay-log is braced at its rear side by a member b^6 of heavy circular form and having a central recess b^7 for the passage of the connecting-rod C. The crank-wheel C^1 is equipped, as shown in Fig. 20, with an adjustable block c for varying the throw of the connecting-rod.

The sleeve D^1 of the sprocket-wheel D is equipped at its front end with a flange d between which and the hub of the wheel the bearing D^2 fits, thereby to prevent shifting of the sprocket-wheel as the shaft C^2 moves longitudinally during the operation of feeding the stay-log toward the knife. The feeding-mechanism E which serves to feed the stay-log carriage, or frame, B^2 toward the knife, comprises a connecting-rod e joined to the eccentric D^3; a rock-lever e^1 actuated by the rod e; a pair of screws e^2 journaled in the frame B and having threaded connection with bushings e^3 connected with the frame B^2 in the manner shown in Fig. 5; a pair of sprocket-wheels e^4 secured on the rear ends of the screws e^2 and connected by a sprocket-chain e^5; a ratchet-wheel e^6 secured on one of the screws e^2; a rock-lever e^7 journaled on the shank of said screw and connected by the rod e^8 with the rock-lever e^1; a spring-held pawl e^9 carried by the rock-lever e^7 and engaging the ratchet-wheel; a shiftable cam e^{10} having slotted connection with the stem of the corresponding screw e^2 and equipped with a shank e^{11}; and a rock-shaft e^{12} having an arm e^{13} at its rear end connected with the shank e^{11} of the cam e^{10}, and having at its front end an actuating lever e^{14} (Figs. 4, 7 and 8) equipped with a handle e^{15} and a spring-held plunger e^{16} adapted to engage perforations e^{18} with which the bed A is provided. As will best be understood from Figs. 4 and 12, when the rock-shaft e^{12} is turned from the position shown in Figs. 4 and 7 in the direction indicated by the arrow in Fig. 7, the arm e^{13} will be thrown upwardly and the cam e^{10} elevated. Said cam has a peripheral surface over which projects a lug e^{19} carried by the pawl e^9; and, when the cam is elevated, it serves, by engagement with said lug, to withhold the pawl from the ratchet-wheel, thereby preventing feeding of the stay-log carriage B^2.

The connections between the shaft F and the horizontally reciprocating knife-carriage and the vertically reciprocating stay-log are such, that the knife-carriage makes a complete movement in one direction while the stay-log is making a complete movement of descent; and the knife-carriage makes a complete movement in the opposite direction while the stay-log makes a complete movement of ascent. The purpose of this synchronous movement is to provide for the complete slicing off of a veneer during the movement in one direction of the knife, thereby providing for a continuous drawing movement of the knife during the slicing operation. Experience has demonstrated that such a movement is essential to the perfect production of veneers by a slicing operation, as distinguished from a sawing operation.

In the construction shown, the machine operates to slice off a veneer as the knife-carriage moves toward the shaft F; and the cam a^9 operates to tilt the knife away from the stay-log preparatory to the return movement of the knife-carriage, during which return movement the feed-mechanism operates to feed the stay-log carriage the thickness of a veneer toward the knife. The knife employed preferably is of special form and is shown in detail in my application No. 328363 of even date herewith. It operates upon a novel principle, and the improved process is claimed in said application.

I have shown the stay-log carriage B^2 equipped with a grinding device G which operates in conjunction with the screw a^{12} in the operation of grinding the knife. The grinding mechanism is not claimed in the present application, and need not be described in detail.

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

1. In a machine of the character set forth, the combination of a horizontal guide, a knife-carriage movable longitudinally thereon, a horizontal guide at right angles to said first-named guide, a stay-log carriage movable on said second-named guide, means for feeding the stay-log carriage toward the knife-carriage, a shaft journaled in the stay-log carriage, a vertically reciprocable stay-log, a connecting-rod connecting said stay-log to said shaft, and a shaft parallel to said first-named shaft and serving to actuate said knife-carriage and said first-named shaft.

2. In a machine of the character set forth, the combination of a horizontally reciprocable knife-carriage, a horizontally movable stay-log carriage, a vertically reciprocable stay-log, a shaft journaled in the stay-log carriage and serving to actuate the stay-log, a parallel shaft equipped with a crank and a sprocket-wheel, a connecting rod joining said crank to said knife-carriage, and a chain joining said sprocket-wheel to said first-named shaft.

3. In a machine of the character set forth, the combination of a horizontally reciprocable knife-carriage, a horizontally movable stay-log carriage, a vertically reciprocable stay-log, a shaft journaled in the stay-log carriage at right angles to the plane of the stay-log, feed-mechanism connected with said shaft and with the stay-log carriage, a parallel shaft, sprocket-wheels of equal size on said shafts, a chain connecting said sprocket-wheels, a crank-arm connected with said second-named shaft, and a connecting rod joining said crank-arm to said knife-carriage.

4. In a machine of the character set forth, the combination of a bed equipped with a horizontal guide, a knife-carriage mounted on said guide and having a pivoted knife-supporting member, a rock-shaft journaled in said pivoted member and equipped at its ends with wrist-pins, blocks in which said wrist-pins are journaled, guides on the body of the carriage receiving said blocks, a cam-arm connected with said rock-shaft, a stationary cam serving to engage said cam-arm, means for reciprocating the carriage, a vertically reciprocable stay-log, and means for reciprocating the stay-log.

5. In a machine of the character set forth, the combination of a horizontally reciprocable knife-carriage, a horizontally reciprocable stay-log carriage movable at right angles to the knife-carriage, a vertically reciprocable stay-log mounted on the stay-log carriage, a shaft journaled in the stay-log carriage and serving to reciprocate the stay-log, a sprocket-wheel journaled in a stationary bearing and splined on said shaft, said sprocket-wheel being immovable longitudinally of the shaft, a shaft parallel with said first-named shaft, a sprocket-wheel thereon connected with said first-named sprocket-wheel, and means connecting said second-named shaft with said knife-car-

riage, whereby the knife-carriage and stay-log receive simultaneous movements of reciprocation.

6. In a machine of the character set forth, the combination of a horizontal guide, a knife-carriage movable longitudinally thereon, a horizontal guide at right angles to said first-named guide, a stay-log carriage movable on said second-named guide, means for feeding the stay-log carriage towards the knife-carriage, a shaft journaled in the stay-log carriage, a vertically reciprocable stay-log mounted on the stay-log carriage, a connecting rod joining said stay-log to said shaft, and actuating means for said shaft and knife-carriage timed to produce simultaneous reciprocations of the stay-log and knife-carriage.

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In presence of—
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J. H. LANDES.