J. SHELLENBERGER.

VENEER OR SLICING MACHINE.

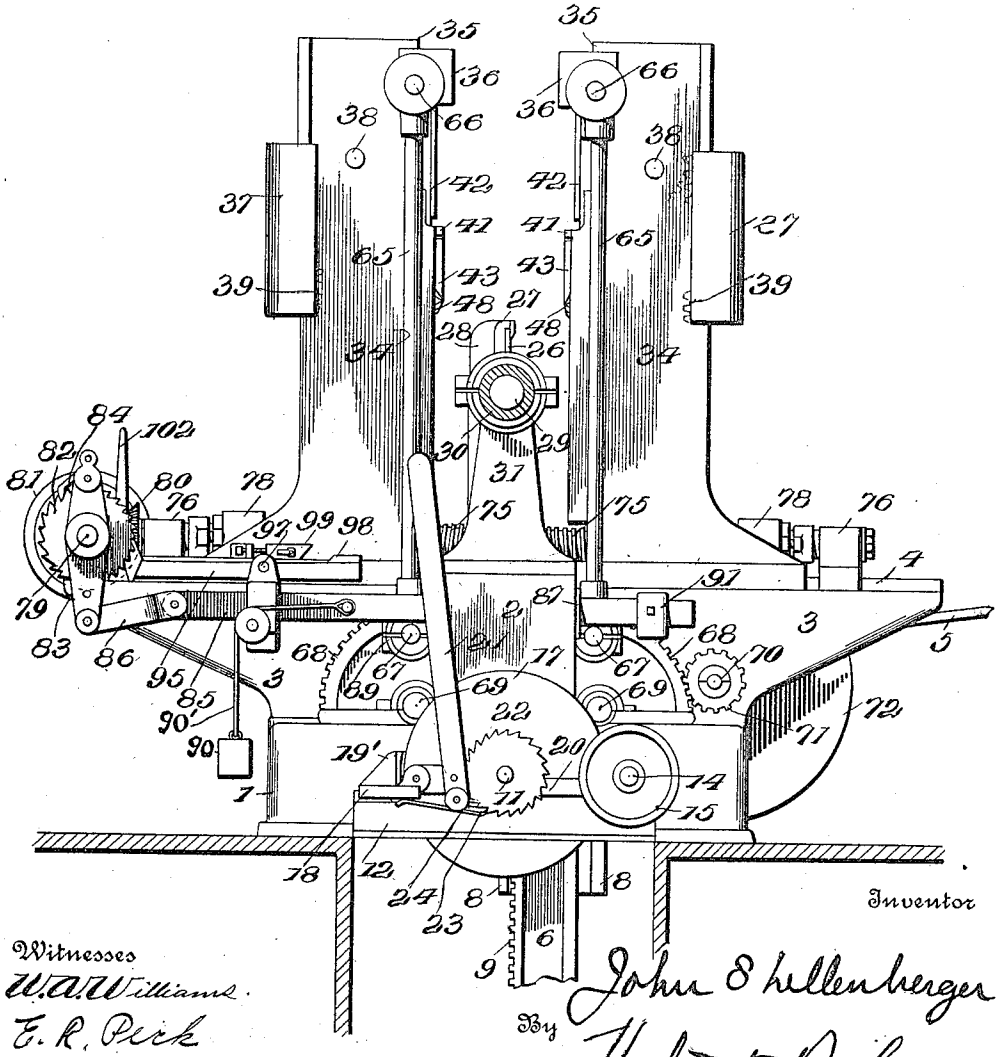
APPLICATION FILED JUNE 24, 1912.

1,143,081.

Patented June 15, 1915.

7 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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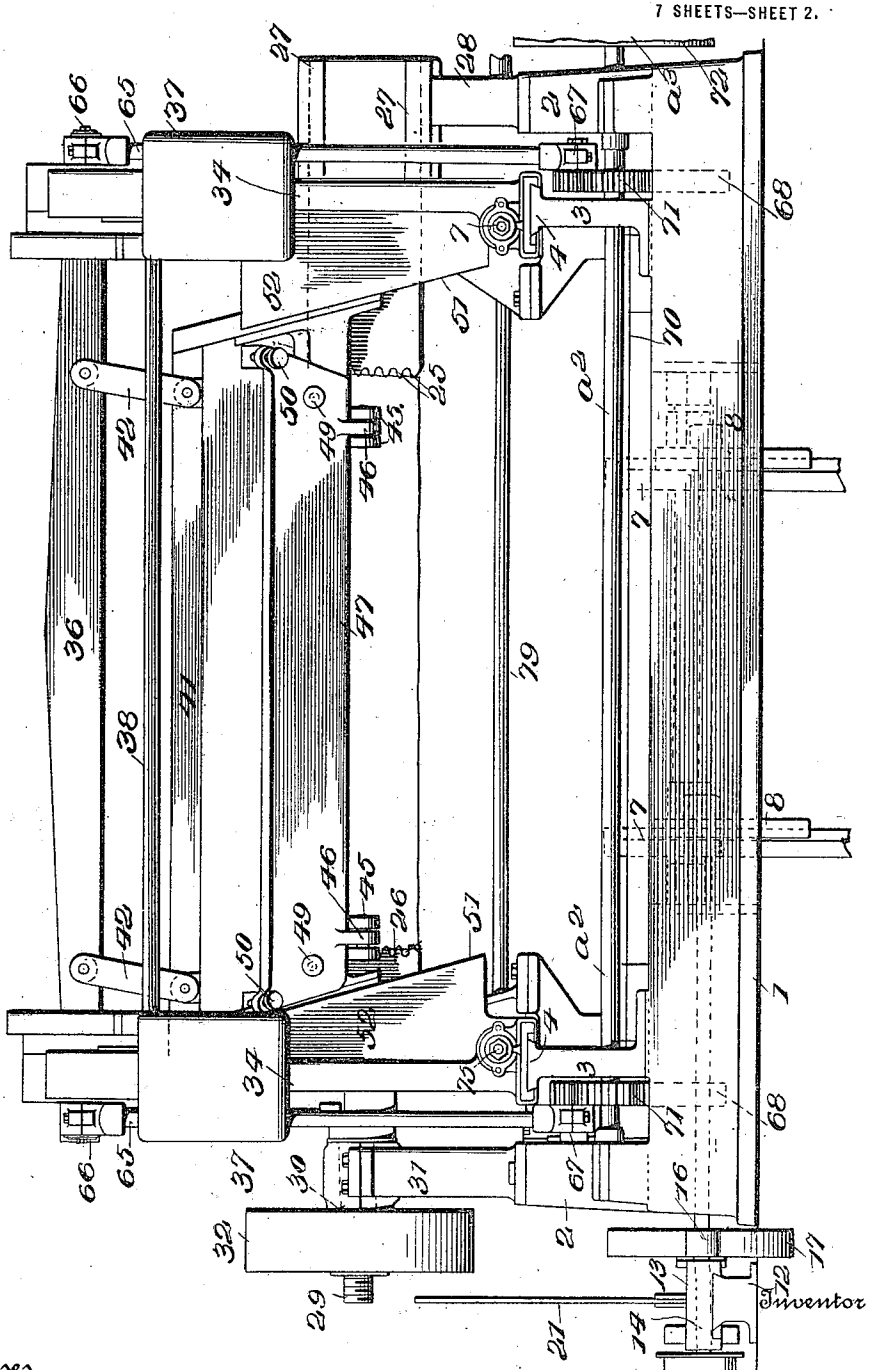


Fig. 2.

Witnesses

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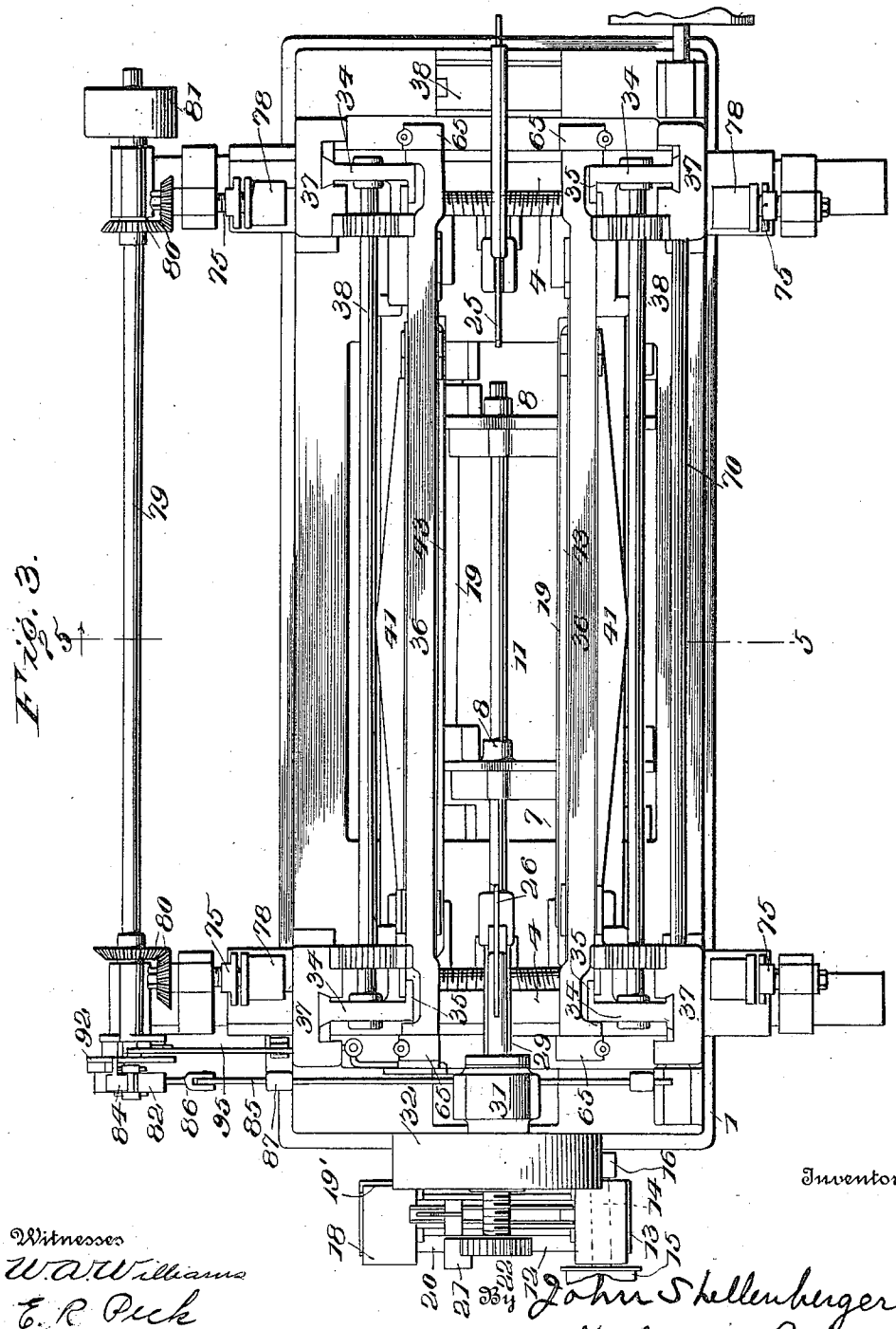


Fig. 3.

Witnesses
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7 SHEETS—SHEET 4.

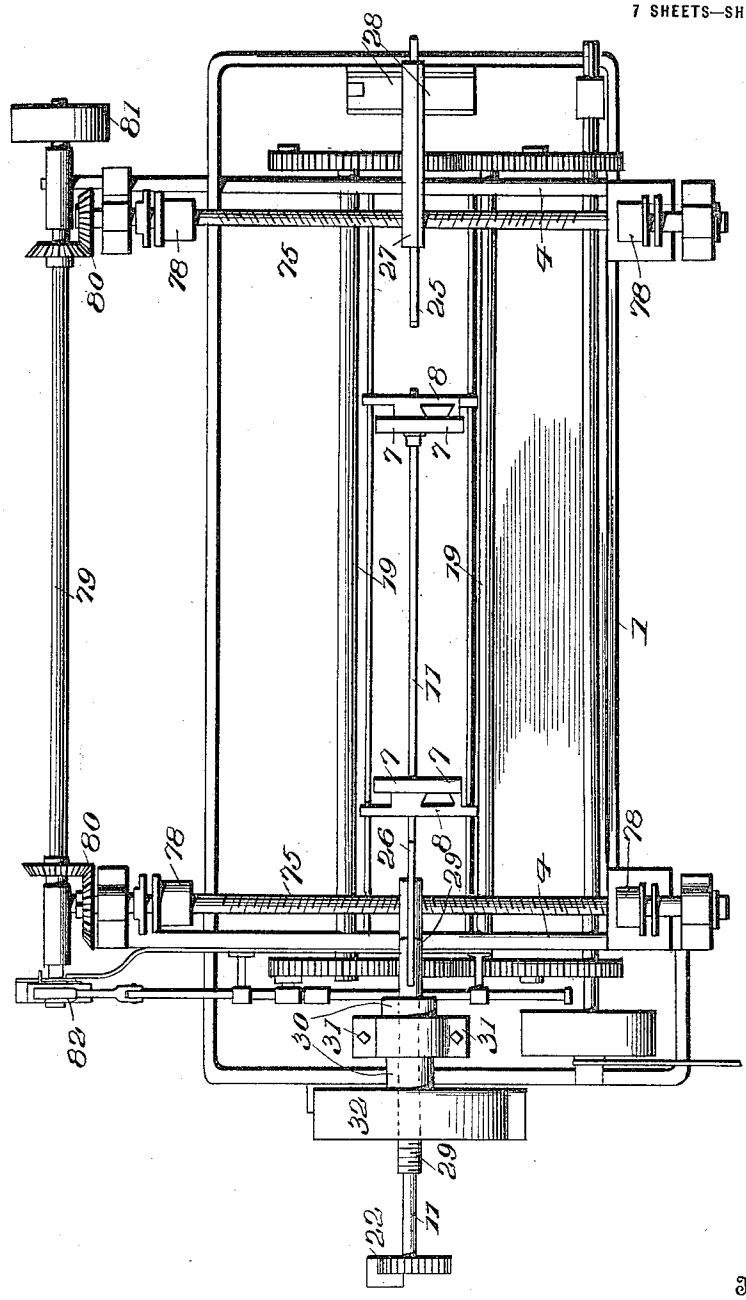


Fig. 4.

Witnesses

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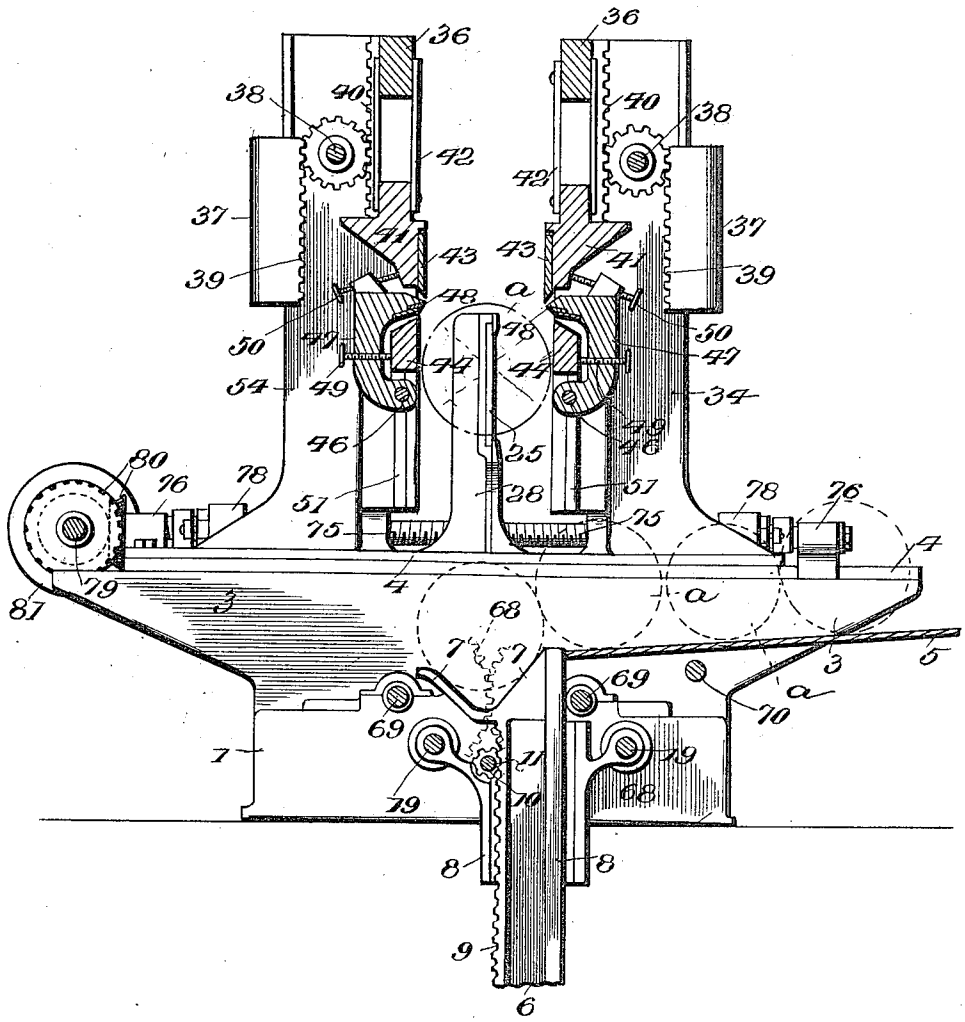
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7 SHEETS—SHEET 5.

Fig. 5.



Witnesses

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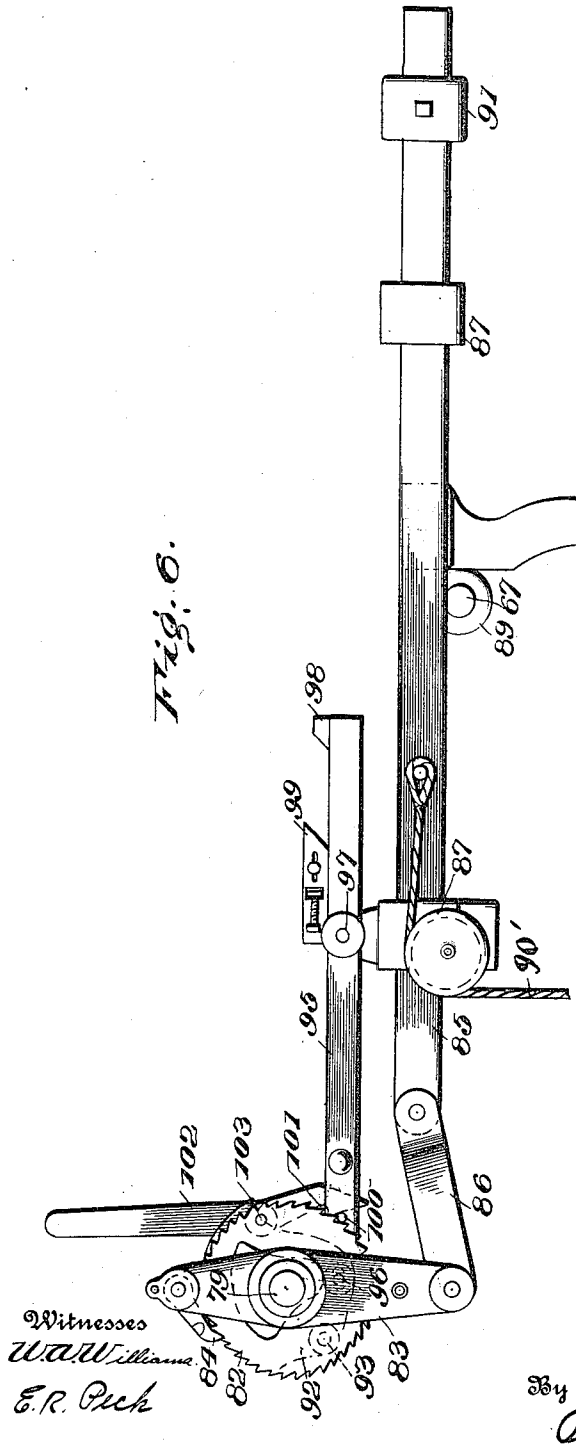


Fig. 6.

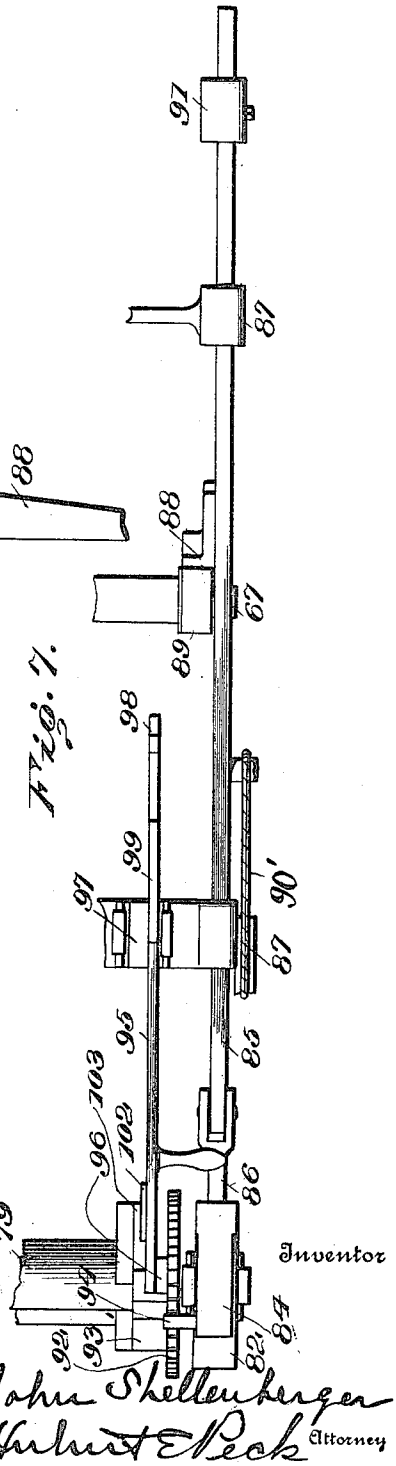


Fig. 7.

Witnesses

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7 SHEETS—SHEET 7.

Fig. 8.

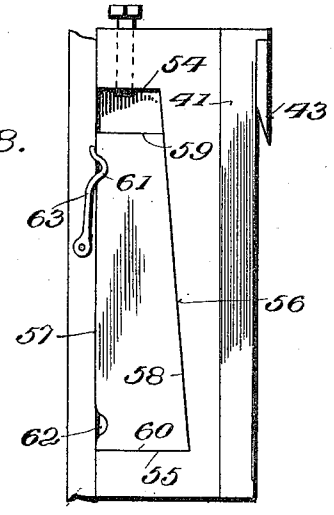


Fig. 9.

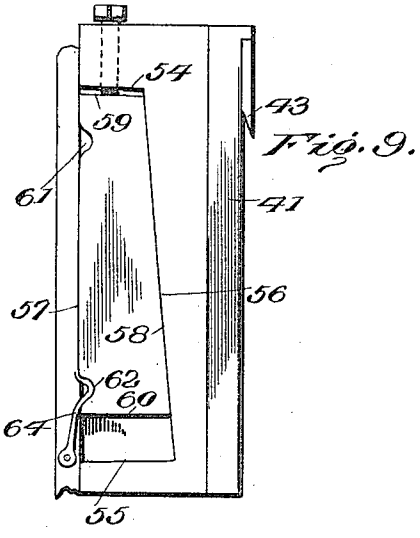


Fig. 10.

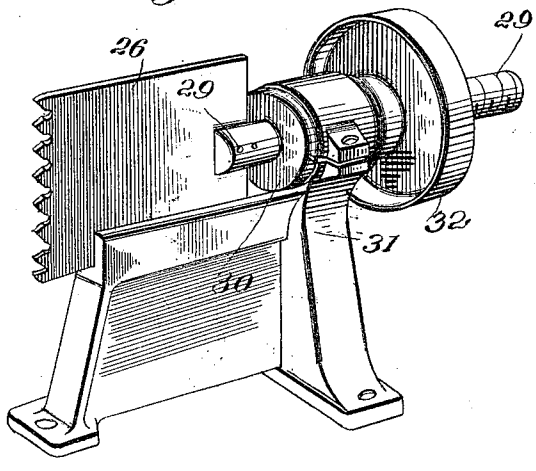
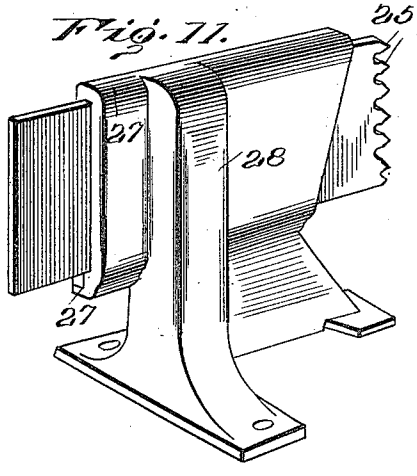


Fig. 11.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN SHELLENBERGER, OF ROME, GEORGIA.

VENEER OR SLICING MACHINE.

1,143,081. Specification of Letters Patent. Patented June 15, 1915.

Application filed June 24, 1912. Serial No. 705,483.

To all whom it may concern:

Be it known that I, JOHN SHELLENBERGER, a citizen of the United States, residing at Rome, county of Floyd, State of Georgia, have invented certain new and useful Improvements in Veneer or Slicing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in and relating to veneer or slicing machines; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanation of the accompanying drawings illustrating what I now believe to be my preferred embodiment from among other formations, constructions and combinations within the spirit and scope of my invention.

It is an object of my invention to provide improved apparatus whereby round bolts or blocks of other shapes obtained from poles, small logs or other timber can be economically utilized for the production of veneer, box shooks, crate material, thin lumber and the like.

A further object of the invention is to provide an improved veneer or slicing machine peculiarly adapted for handling comparatively small round bolts and capable of cutting the same into thin lumber or veneer without requiring squaring of the bolts preparatory to the slicing operation.

A further object of the invention is to provide a machine for slicing veneer or thin lumber from bolts, embodying cutting mechanism comprising two cutters arranged to simultaneously operate on opposite sides of the bolt and thereby balance the pressure of the cutting operation thereon and at the same time to double the output by producing two sheets of veneer at each stroke of the cutting mechanism.

A further object of the invention is to provide a veneer or slicing machine embodying improved means for chucking or holding the bolt to be operated on.

A further object of the invention is to provide cutting devices for simultaneously operating on opposite sides of the bolt and feed devices for automatically feeding said cutting devices toward each other and the bolt.

A further object of the invention is to provide a veneer or slicing machine embodying a pair of feed carriages arranged at opposite sides of the bolt to be sliced and provided with cutting devices to slice veneers or the like simultaneously from opposite sides of said bolt, in connection with an automatic feed for moving said carriages in opposite directions toward the bolt and a stop mechanism for stopping the forward feeding movements of said carriage when they reach a certain distance apart.

A further object of the invention is to provide a veneer machine, or the like, with an improved reciprocating cutting or slicing mechanism embodying a knife, and a coacting pressure bar.

A further object of the invention is to provide the reciprocating cutting apparatus of veneer machines and the like, with improved means for imparting a draw-cut operating stroke to said cutting apparatus.

A further object of the invention is to provide improved means in reciprocating cutter veneer machines, and the like, for relieving the pressure of the cutter toward the bolt, on the return stroke and for pressing the cutter to the work on the cutting stroke.

A further object of the invention is to provide veneer machines and the like, with improved means for handling the bolts and elevating the same to the chucking devices.

A further object of the invention is to provide an improved organized apparatus for slicing veneer or the like from bolts and for delivering the bolts to the chucking position and for chucking the same, and embodying feed carriages provided with reciprocating slicing knives and automatic feed and stop mechanisms for said carriages and means whereby the feed can be varied to control the thickness of the veneer or product cut from the bolts.

A further object of the invention is to provide certain improvements in arrangements of parts and in combinations and construction of elements whereby a highly efficient apparatus will be produced for slicing bolts or the like, into veneer or other thin stuff.

The invention consists in certain novel features of construction and in combinations and arrangements as more fully and particularly pointed out hereinafter.

Referring to the accompanying drawings;—Figure 1, is an end elevation. Fig. 2,

is a side elevation. Fig. 3, is a top plan. Fig. 4, is in the nature of a diagrammatical plan of the feed screw shafts and actuating means, incidentally showing the head and tail blocks and dogs, and the bolt elevator in plan. Fig. 5, is a cross section on the line 5—5, Fig. 3. Fig. 6, is a detail view of the step by step actuating mechanism for the feed screw shafts, and of the automatic stop mechanism. Fig. 7, is a plan view of the structures disclosed by Fig. 6. Figs. 8 and 9, show end edge elevations of the knife head and the sliding wedge therein, Fig. 8, showing the knife head at its limit of upward movement, and Fig. 9, at its limit of downward movement. Fig. 10, is a detail perspective of the head block and its dog. Fig. 11, is a detail perspective of the tail block and its dog.

The particular apparatus illustrated, for the purpose of disclosing an embodiment of my invention, comprises an elevating or lifting device forming a cradle designed to take the bolts (the work) one at a time from the lower end of a skidway and elevate the same to the central chucking or dogging position. This elevator holds the bolt in the elevated position until the same is firmly and rigidly gripped and held by certain chucks or dogs, and the elevator is then permitted to drop to normal position and to receive another bolt from the skidway. The skidway consists of a plane inclining downwardly from the boiling or steaming vat to said elevator so that the bolts move down said skidway by gravity. The elevator holds back the bolts on the skidway and is so arranged that when the elevator drops from an elevating stroke the lower bolt on the skidway will drop into or onto the elevator cradle in position to be carried up thereby on the next lifting stroke thereof. Suitable manually controlled means are provided for controlling the elevator actuating mechanism so that the elevator is under the perfect control of the operator. Suitable manually controlled power operated chucking or dogging devices take the bolt from the raised elevator and rigidly hold the bolt in position to be operated on by the slicing devices and maintain the same in such position while the bolt is being reduced to veneer or thin lumber. This position is herein referred to as the chucking or dogging position. The bolt dogging position is centrally arranged between a pair of opposite feed carriages provided with slicing or cutting mechanisms. These carriages are simultaneously and uniformly fed in opposite directions, with a step by step forward movement, toward the bolt to be operated on, and on their return strokes move in opposite directions from the bolt or dogging position. Automatic feed mechanism is provided for feeding these carriages on each forward stroke a distance approximately equal to the thickness of the veneer or lumber to be produced. An automatic stop mechanism is also provided to stop the feeding movement of the carriages when the bolt has been consumed or approximately completely reduced, and to permit the return movements thereof.

The two feed carriages are provided with similar reciprocating cutting or slicing mechanisms designed to simultaneously operate on opposite sides of the bolt, and thereby cut two veneer or slices therefrom at each stroke of such mechanisms. These cutting mechanisms comprise straight reciprocating knives acting on the bolt with a draw cut, pressure bars exerting pressure on the bolts to compress the material thereof while being cut or sliced, and devices for relieving the pressure of the knives and pressure bars toward the bolt, on the return strokes of such parts after each slicing or cutting stroke.

In the accompanying drawings, 1, is a horizontally-disposed elongated base having a central opening or depression for the reception of the bolt elevator. The end portions of this base are formed with central elevated seats or supports 2, on which the head and tail blocks are bolted as hereinafter pointed out.

A pair of parallel frames or castings 3, are arranged at the opposite end portions of the base and extend transversely thereof and are bolted or otherwise secured thereto and supported thereby. These frames rest on the top of the base and extend a distance above the plane of the base and also project forwardly and rearwardly beyond the sides of the base. The upper longitudinal portions of these two frames 3, are planed or otherwise formed to provide a pair of elongated straight horizontal tracks or slideways 4, spaced apart a distance somewhat in excess of the length of the longest bolt the machine can receive. These tracks 4, receive the cutting apparatus feed carriages which reciprocate thereon toward and from the dogging position about at the centers of the length thereof.

The skidway 5, to receive the bolts *a*, from the boiling or steaming vat (not shown) is supported in any suitable manner, with its lower end portion arranged between the frames 3, and extending over one of the sides of the base and inclining downwardly and forwardly (so that the bolts will roll down thereon by gravity) and with its lower delivery end in the open central portion of the base and approximately at the center of the base to deliver the bolts to the vertically movable bolt elevator.

The bolt elevator comprises a vertically disposed slide forked or otherwise formed at its upper end to receive and lift a bolt, and having means for reciprocating the same vertically. In the particular example

illustrated, I show a pair of parallel vertically disposed plates or slides 6, spaced a distance apart and having their upper ends forked or centrally and transversely depressed to form bolt receiving and holding jaws 7. These slides are carried by and reciprocate vertically in suitable housings 8, arranged in the central opening or depression of the base. These housings are supported by and are adjustable toward and from each other on a pair of fixed parallel spaced horizontal rods 19, suitably supported in and longitudinally of the base and arranged within the open center thereof below the skidway. The housings are shown formed with lateral arms having transverse openings receiving said supporting rods so that the housings can slide thereon to adjust the lifting jaws or slides to the lengths of the bolts to be received thereby.

The slides (lifting jaws) are provided with suitable means for elevating the same. For instance, I show the slides formed with vertical racks 9, meshing with pinions 10, on a horizontal rotary pinion driving shaft 11, extending transversely through and mounted in said housings. When in normal lowered position, the bolt receiving jaws of the elevator are arranged at the lower end of the skidway so that the lower bolt thereon will roll into said jaws and will be held thereby so as to hold back the remaining bolts on the skidway. The bolt resting horizontally in the cradle formed by said jaws, is elevated to the dogging or chucking position by the shaft 11, and its pinions 10, in mesh with the racks 9, and while the jaws are in elevated position, the edges of the slides of said jaws will hold back the bolts on the skidway. When the jaws again move down to lowered position, the lowermost bolt on the skidway will automatically drop into said jaws as before described.

Various mechanisms can be provided for actuating and controlling the shaft 11, in operating and controlling the bolt elevator. For instance, in the particular example illustrated, I show the shaft 11, continued through and beyond one end of the base and mounted in and extended through and beyond a suitable journal box carried by a fixed girder 12, arranged beyond the base end. This girder carries a block or slide 13, movable toward and from shaft 11, and provided with a rotary shaft 14, adapted to be coupled up with any suitable source of power, as by a driving belt to pulley 15. The drive shaft 14, is provided with a friction pinion 16, adapted to be brought into friction driving engagement with the friction wheel 17, on the shaft 11. At the opposite end of the girder or support 12, I provide a slide 18, provided with a brake shoe 19′, arranged to have braking engagement with the wheel 17. The slides 13 and 18, are suitably connected to move in unison, as by a bar 20. A suitably fulcrumed upwardly extending hand lever 21, is connected to the bar 20, to operate said slides to move the friction pinion into driving engagement with wheel 17, and at the same time move the brake shoe from engagement with said wheel 17, or to move the brake shoe into braking engagement with said wheel and the driving pinion out of engagement therewith. When the driving pinion engages said wheel, the shaft 11, will be driven in a direction to raise the bolt elevator. When the pinion is moved from said wheel, the elevator will drop by gravity to lowered position and the speed of the drop will be controlled by the hand lever and brake shoe.

In order to hold the elevator in raised position with the bolt at the dogging position, until the dogging or chucking operation is completed, I show a ratchet wheel 22, on the end of shaft 11, and engaged by a pivoted spring-held pawl 23, carried by said girder. This pawl holds the shaft 11, against rotation in the direction necessary to permit downward movement of the bolt elevator. The hand lever is provided with a projection 24, to engage said pawl and swing the same from the ratchet wheel, when the lever is swung in a direction to throw shaft 11, out of gear with its driving power, and permit rotation thereof with and due to the downward movement of the bolt elevator.

It will be noted that the elevator slides form an open-top cradle in which the bolt rests horizontally with its ends exposed for engagement by the bolt gripping dogs. Also that this cradle is so formed as to center the bolt into the vertical plane in which the dogs are located so that the dogs will engage the bolt ends centrally and thus hold the bolt centrally between the two feed carriages.

The bolt elevator carries the bolt up between the two tracks 4, to the dogging position elevated above the horizontal plane of said tracks where the bolt is held horizontally and transversely arranged with respect to the tracks and in a vertical plane which if extended down would approximately intersect said tracks at the centers of their lengths. The bolt is chucked, gripped or held in this dogging position by a pair of dogs or chucks 25, 26, engaging the ends of the bolt. Each dog consists of a flat vertically arranged plate horizontally adjustable toward and from the other dog in a direction transversely of the length of the tracks 4, to cause the adjoining vertical end edges of the dogs to engage or disengage the opposite ends of the bolt. The dog 25, is adjustably carried by and adapted to be fixed in the horizontal guide and clamping ways 27, of a tail block 28, fixed to one of

the elevated end seats or supports 2, of the base 1, so that said dog 25, is arranged a distance above the center of the adjacent track 4, and extends from the tail block transversely with respect to said track to a point above the open center of the base. The opposing dog 26, is correspondingly arranged a distance above the center of the other track 4, and is alined with and in the same vertical plane as dog 25. The dog 26, is adjustable toward and from the dog 25, to grip the bolt and to release the residue after the bolt has been operated on by the knives. In the example illustrated, the dog 26 is provided with a horizontal outwardly extending shank rigidly secured thereto and formed by an exteriorly screw threaded shaft 29. This shaft extends longitudinally through an internally threaded rotary sleeve 30, confined against longitudinal movement and to rotate in a journal box on head block 31. At its outer end this sleeve is provided with driving pulley 32, adapted to receive a driving belt from any suitable source. The thread of the shaft 29, meshes with the internal thread of the sleeve so that rotation of the sleeve in one direction will move said shaft and its dog inwardly to bolt gripping position while rotation of the sleeve in the opposite direction will move the dog outwardly from gripping position.

The dogs are in opened position when the bolt elevator raises a bolt to elevated or dogging position. When thus elevated, the bolt lies in the elevator jaws between the two dogs. The power is then thrown on through pulley 32, to rotate the sleeve 30, in the proper direction and the dog 26, is thereupon driven inwardly to rigidly and tightly grip and lock the bolt between the two flat vertical dogs. The bolt elevator is then permitted to drop to lowered position, leaving the bolt rigidly held in position to be operated on by the knives and thereby reduced to sheets of veneer or thin lumber.

A pair of similar vertically disposed carriages are slidably arranged on the tracks 4, at opposite sides of the dogs, or at opposite sides of the dogging position, and these carriages are provided with the cutting or slicing mechanisms. Each carriage extends over and between the two tracks and is mounted on both tracks, and consists of a pair of parallel vertical uprights 34, at their lower ends or bases suitably confined on and slidable longitudinally of the two tracks 4. The upper portions of the inner or front longitudinal edges of these two uprights (the longitudinal edges adjacent to the opposite similar carriage) are planed or otherwise formed to constitute vertical slide or guideways 35, to which the opposite ends of a cross head 36, are slidably confined to reciprocate vertically thereon.

The horizontal vertically reciprocatory cross head 36, extends between the two uprights and laps and slides on their front longitudinal edges and actuates and carries a block or head provided with a cutting or slicing knife and a presser bar. I preferably provide means for counterbalancing the cross head and parts carried thereby and in the example illustrated, show vertically slidable counterbalancing weights 37, slidably confined to the rear longitudinal edges of the two uprights and operatively connected with the cross head to move vertically in opposition thereto through the medium of a rotary cross shaft 38, mounted in the upper ends of the two uprights and provided with pinions arranged between and meshing with vertical racks 39, on the counter weights and vertical racks 40, on the cross head ends as will be readily understood by those skilled in the art.

A horizontal knife bar or head 41, is arranged below and parallel with said cross head and is actuated thereby and supported therefrom through the medium of several depending laterally swingable links 42, at their lower ends joined by transverse pivots to the top edge portion of the knife bar and at their upper ends joined to the front side face of the cross head by transverse pivots. The cross head reciprocates in a straight or perpendicular vertical path, but the link connection permits the knife head to move vertically with the cross head but in an inclined path, whereby the knife head can have a horizontal endwise as well as a vertical movement.

The knife head is in the form of an elongated casting, or frame extending horizontally between the two uprights, and having a horizontal upper body portion to the front side of which the horizontal knife 43, is secured having a straight horizontal lower cutting edge projecting down from the lower longitudinal edge of said body portion and in front of a longitudinal opening through the knife head, above a horizontal web or cross bar 44, of said head connecting the vertical ends of the head and forming the lower edge wall of said opening. The lower edge of said bar or web 44, is formed with depending ears 45, to which the lower edge ears 46 of the presser bar 47, are pivotally joined by horizontal pivots. The presser bar is arranged behind the cross bar or web 44, of the knife head and its upper longitudinal portion extends forwardly through said opening below the knife and at its front edge is provided with, and beveled upwardly and forwardly to, a presser edge or plate 48, parallel with and immediately below the cutting edge of the knife to exert forward pressure on the wood transversely of the plane of the cutting operation and to compress the wood as it is being cut. This presser edge slides down on the face of the

wood as the knife descends therethrough and maintains a fixed relation therewith. The presser bar is designed to press inwardly against the wood practically at the edge of the knife so that the wood is sliced under a constant pressure and while the fibers are under some compression to prevent the production of checked and broken veneer and to produce the same with a solid body and smooth surface.

It will be noted that the presser bar edge or plate 48, is located at the upper longitudinal portion of said bar while the bar is hinged at its lower longitudinal portion to the knife head, to permit adjustment of the bar on the axis of the hinge connection to carry edge 48 toward and from the work. The presser bar is normally held in fixed relation with respect to the knife head by screw rods 50, fixed to the head and extending rearwardly therefrom and loosely through openings in lugs rigid with the presser bar; said rods being provided with nuts adjustable thereon and holding the presser bar in the desired adjustment toward the work and with the adjustable stop screws 49, carried by said bar held abutting against the web 44, of the knife head. The knife head is formed with parallel end edges straight throughout their lengths from the lower to the upper longitudinal edges of the head, and inclined or oblique from the upper to the lower edges of the bar to correspond to inclined slideways 51, carried by the uprights of the carriage and formed at the upright edges of vertical flanges 52, extending toward each other from the adjoining vertical side faces of the uprights. The grooves or slideways 51, are arranged in a vertical plane parallel with the vertical plane in which the cross head reciprocates and the knife is thereby reciprocated in a vertical plane, but by reason of the inclination of said grooves 51, and of the end edges of the knife head, said head is moved endwise as it descends and the knife thereby operates on the bolt with a draw cut, as will be readily understood by those skilled in the art.

I preferably provide wedge devices or other means between the end edges of the knife head and the walls of the grooves 51, in which said edges slide, in order to relieve the lateral pressure of the knife head toward the work (the bolt) on the upward or return stroke of such head. For instance, in the particular example illustrated, I show the rear sides of the end edges of the knife head formed with vertical recesses arranged longitudinally of said grooves and at their rear sides open to the rear longitudinal flanges or walls of said grooves and forming abutments 54, 55, at the upper and lower ends of the recesses and inclined or wedging longitudinal walls 56, at the floors of the recesses. Wedges are arranged in these recesses and these wedges have straight rear longitudinal edges 57, parallel with and slidable along the rear longitudinal flanges or walls of the grooves, while the front longitudinal edges 58, of said wedges are inclined to lie parallel with and slide along the corresponding inclined floors 56, of the recesses. The wedges are shorter in length than the recesses and their upper ends 59, form flat shoulders to abut against the upper ends of abutments 54, of the recesses when the knife head carries the wedges down, while the lower ends 60, of the wedges form flat shoulders to abut against the lower ends of abutments 55, of the recesses, when the knife head carries the wedges up. The wedges are arranged to slide with the knife head during the major portion of the stroke thereof, but the knife head moves for a short distance in starting on its upward or return stroke, and in starting on its operative or down stroke, independently of the wedges, the path of reciprocation of the wedges being shorter than the path of reciprocation of the knife head. This result is accomplished by having the wedges shorter than the recesses and providing notches or depressions 61, 62, in the rear longitudinal edges of the wedges and near the upper and lower ends thereof to receive detaining or retarding spring catches 63, 64, secured to walls of the grooves 51, near the upper and lower ends thereof and springing against the rear edges of the wedges, or into the groove 51, to engage said wedge edges. The upper springs 63, are located near the upper ends of the path of movement of the wedges while the springs 64, are located near the lower end of the path of movement of the wedges. When the knife head is at its limit of upward movement, the lower end abutments of the recesses are in engagement with the lower ends of the wedges while the upper ends 59, of the wedges are spaced a distance below the upper end abutments 54, of the recesses, and the wedges are yieldingly held by upper springs 63, in notches 61, against reciprocation with the knife head. When the knife head starts down on its cutting or operative stroke, the springs 63, will hold the wedges against downward movement until the abutments 54 move down into engagement with the wedge upper ends 59, but during this independent movement of the knife head on the wedges, the wedge inclines 58, are forcing or driving the knife head bodily laterally or forwardly into the vertical plane of the cut to be formed through the work. By the time the slicing knife reaches the work (the bolt) the abutments 54, will have engaged the upper ends of the wedges and started the wedges on their downward sliding movement with and as a part of the knife head. When the knife head reaches its

limit of downward movement the lower springs 64, will snap into the lower notches 62, and uphold the wedges from dropping to the lower end walls 55, of the recesses. Hence when the knife head starts on its upward or return stroke, the springs 64, will hold the wedges against upward movement until the lower ends 55, of the recesses move up into engagement with the ends 60, of the wedges and lift the wedges with the knife head, but during this independent upward movement of the knife head, said head is moving toward the reduced ends of the wedges and hence is relieved of the lateral pressure of the wedges toward the work and the knife and presser bar can easily move up past the work without undue pressure thereagainst.

In this connection it should be noted that the ends of the knife head are loosely confined in the ways or grooves 51 to afford the necessary lateral play to permit the wedges to perform the function just described. However, I do not wish to limit all features of my invention to the employment of wedge or other means to relieve the knife head of pressure toward the work on its return stroke.

The foregoing description of a knife head and parts carried thereby and coöperating therewith, applies to both feed carriages as these carriages are provided with similar cutting devices and reciprocating cross heads so that the two cutting devices will uniformly and simultaneously operate on the bolt (work) from opposite sides thereof and simultaneously sever two sheets of veneer or pieces of lumber therefrom and thus balance the cutting strain on the bolt.

The two cross heads are reciprocated by links or pitmen 65, at their upper ends mounted on studs 66, projecting outwardly from the cross head ends, and at their lower ends mounted on crank studs or pins 67, projecting outwardly from similar gear wheels 68, arranged between the horizontal frames 3, and the ends of the base. The gears 68, are arranged in pairs at opposite ends of the base with the gears of each pair in mesh so that the gear wheels rotate uniformly and in opposite directions to simultaneously and uniformly reciprocate the cross heads together. These gears 68, are carried by a pair of parallel horizontal shafts 69, mounted on and extending longitudinally of the base. The gears 68, are driven by main drive shaft 70, mounted on and arranged longitudinally of the base and having driving pinions 71, in mesh with a gear 68 of each pair. The shaft 70, can be provided with any suitable means for coupling the same to the driving power, although I show said shaft driven through pulley 72, which is usually operated in connection with a suitable clutch and means whereby the shaft can be readily thrown into and out of gear with the driving power.

The two feed carriages are actuated by a pair of parallel horizontal shafts 75, arranged adjacent to the two tracks 4, respectively, and mounted to rotate in journal boxes 76, fixed to the frames 3, forming said tracks. These shafts form right and left hand threaded feed screws. The similar threaded portions at corresponding ends of the two shafts pass through and mesh with nuts 78, fixed to the two uprights of one carriage, while the oppositely threaded ends of the two shafts pass through and mesh with nuts 78, fixed to the two uprights of the other feed carriage. The arrangement is such that rotation of these feed screw shafts will uniformly propel the feed carriages in opposite directions. Said shafts rotate in unison and rotation thereof in one direction will propel the two feed carriages toward each other, that is, toward the work, while rotation of said shafts in the opposite direction will move the carriages on their return strokes, that is, away from each other and toward the outer ends of the tracks 4.

The feed screw shafts 75, are geared together through the medium of and are actuated by a drive shaft 79, mounted in suitable boxes carried by corresponding ends of the two frames 3. The drive shaft 79, is operatively and similarly connected to the two feed screw shafts through the medium of bevel gearing 80. The drive shaft 79, is provided with a drive pulley 81, for rotating the same to cause the return strokes of the feed carriages.

Suitable mechanism is provided for actuating the shaft 79, to propel the feed carriages on their operative strokes with a step by step motion. For instance, I show ratchet wheel 82, fixed on the drive shaft 79, and a vertically disposed rock arm 83, rockable about said shaft as a center and at its upper end carrying a pivotal pawl 84, adapted to engage said ratchet wheel and propel the same when the arm is rocked in one direction and to run freely over the teeth of the wheel when the arm is rocked in the opposite direction. This rock arm is actuated by a horizontally disposed reciprocatory bar or slide 85, having push and pull link connection 86, with the lower end of said rock arm 83. The slide 85, is arranged longitudinally of one of the frames 3, and is supported by guides 87, fixed to and projecting laterally from said frame. The bar 85, is arranged at the outer faces of a pair of the knife head actuating gears 68, and is formed with a rigid depending cam arm 88, beside the outer face of one of said gears and in the path of a roller 89, mounted on the extended end of the stud 67, of said gear. The arrangement is such that during a portion of the rotation of said gear, the roller 89, will

be in operative engagement with said cam arm 88, and will thereby move the sliding bar 85, in one direction, say toward the right, and will hence rock the arm 83, in a direction to rotate the shaft 79, (through the medium of the pawl 84, and ratchet wheel 82) and the feed screw shafts 75, in a direction to feed the two feed carriages forward the desired feed stroke distance. The bar is actuated on its return stroke by any suitable means, for instance, I show a weight 90, and flexible connection 90′, for this purpose. When the bar makes its return stroke the shaft 79, remains at rest as the pawl 84, slips loosely over the ratchet wheel teeth.

The distance the cutting apparatus carriages are fed forward at each feed stroke determines the thickness of the veneer or lumber cut from the bolt at each cutting stroke of the knives. The length of this feed stroke is determined by the length of the forward stroke of the slide bar under action of the impelling roller 89, of the gear wheel 68, and this is determined by the distance the cam arm of the slide bar projects into the path of movement of said roller.

The cam arm can be caused to extend a greater or lesser distance into the path of movement of said roller by adjusting the stop or abutment 91, longitudinally of the slide bar toward and from the adjacent fixed guide 87. The time in the rotation of the gear 68, at which the roller 89, strikes the cam arm can hence be advanced or retarded, to increase or diminish the length of time said roller will be in engagement with said arm and hence to increase or diminish the distance the slide bar will be propelled by said roller. The roller 89, and the slide bar cam arm are so arranged that the feed screw shafts and consequently the feed carriage will be at rest while the cutting devices are performing their cutting strokes.

Suitable mechanism is provided to stop the feeding movement of the carriages when said carriages have reached their limits of movement toward the bolt or work, and when the work has been reduced to a mere blank or comparatively thin residue-forming strip.

In the example illustrated, this stop mechanism consists of a vertically swingable pawl-lifter or holder 92, fulcrumed at 93, and arranged beside the ratchet wheel and under and normally out of contact with a lateral lug or projection 94, from the free end of said pawl. This lifter 92, is normally in lowered inoperative position and tends to drop to such position by gravity. A pawl-lifter elevating lever 95, is pivotally joined at its rear end 96, to the lifter in advance of the lifter fulcrum. This lever 95, is arranged beside the adjacent feed carriage and parallel with the direction of movement thereof and is fulcrumed between its ends on transverse pin 97, carried by adjacent frame 3, to rock vertically. At its inner free end said lever is formed with a beveled edge lateral projection 98, arranged in the path of movement of a correspondingly and oppositely beveled lateral projection or toe 99, adjustably secured to and carried by the adjacent feed carriage. When the feed carriage approximately reaches its limit of feeding movement, the toe 99, rides on the projection 98, and depresses the same, and thereby swings the lever 95, in a direction to elevate its rear end and swing the lifter 92 upwardly into engagement with the pawl projection 94, thereby lifting the pawl from operative relation with respect to the ratchet wheel, and the feed mechanism is thereby thrown out of gear or operative connection with the feed carriages notwithstanding the continued rotation of the gears 68, and reciprocation of the slide 85. When the feed is thus stopped power is applied to the pulley 81, to rotate the shaft 79, in a direction to cause the feed screw shafts to actuate the carriages on their return strokes. In the meantime, the main drive shaft 70, can be thrown out of action, and power can be applied to the pulley 32, to withdraw the dog 26, to open position, releasing the residue of the bolt just reduced to veneer, and leaving the dogs in position to receive another bolt from the bolt elevator, which is then operated as hereinbefore described.

When the lever 95, is swung to lift the pawl from the ratchet wheel, a pin 100, projecting laterally from the rear end of said lever catches in a notch 101, in the lower end of an upright hand lever 102, fulcrumed at 103, to a suitable support from frame 3, and thereby holds said lever and the pawl lifter elevated and the feed mechanism out of operative connection with its driving means.

When a fresh bolt has been secured by the dogs in position to be operated on by the cutting devices, the power can be thrown on to cause operation of the gears 68, and the cutting devices, and the carriage feed mechanism can be thrown into operative connection with its operative devices or driving means, by swinging the hand lever 102, laterally and thereby permitting the lever and pawl lifter to drop to normal positions and the pawl to drop into operative engagement with the ratchet wheel.

I have herein employed the term "bolt" in a broad sense to include any kind of work or stock on which the machine is adapted to operate irrespective of whether the stock is cylindrical or other shape.

It will be noted that the machine will operate on bolts varying greatly in diameter as well as in length, and that the cutting devices will operate on these bolts whatever

their exterior formation may be, gradually reducing the bolts uniformly from their opposite sides toward their centers.

The machine described is peculiarly advantageous for operating on bolts of comparatively small diameter produced from small logs or timber that have not been heretofore utilized on an economical basis, to the best of my knowledge and information, for the production of veneer or thin lumber for use in the formation of packing boxes or other receptacles.

I do not wish to limit all features of my invention to apparatus wherein the knives reciprocate and the bolt is held fixed, as the operation might be reversed.

It is evident that various changes, modifications, and variations in the combinations, forms, constructions, and arrangements described might be resorted to and that features might be omitted and elements might be added, without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact disclosure hereof notwithstanding the fact that the constructions disclosed have been specifically described for the sake of clearness in explaining the particular construction illustrated as an example of one embodiment from among others.

What I claim is;—

1. In a veneer machine, or the like, guideways, a reciprocating knife head movable in said guideways, means for reciprocating said knife head, a knife carried by and arranged longitudinally of said head, and wedging means arranged between said head and walls of said guideways to press said knife head laterally on its operative stroke only.

2. In a veneer machine, or the like, means providing guideways, a reciprocating knife head movable longitudinally of said guideways on its operative and return stroke and provided with a cutting knife arranged longitudinally thereof, means for reciprocating said cross head, and wedges carried by said cross head and having wedging faces transversely arranged with respect thereto and bearing against corresponding faces of the cross head to press said cross head laterally in said guideways when the cross head is moving on its operative stroke and to relieve the cross head of said pressure when it is moving on its return stroke, cooperating means being provided to engage said wedges and permit limited independent movement of the cross head with respect to the wedges.

3. In combination, in a veneer machine, or the like, uprights providing vertically disposed slideways, a horizontally disposed vertically reciprocating knife head fitting and reciprocating in said slideways, means for vertically reciprocating said knife head, means for pressing said knife head toward the work as it moves on its cutting stroke and for relieving said lateral pressure as it moves on its return stroke, means for maintaining said cross head in its horizontal position and for imparting an edge wise movement thereto as it reciprocates vertically, a knife arranged longitudinally of said cross head and provided with a depending longitudinal cutting edge, and a presser bar carried by said cross head and arranged longitudinally thereof and having a presser edge parallel with said cutting edge and arranged closely adjacent thereto and below the same to exert pressure on the work at the point where the cutting edge is severing the work.

4. In a veneer machine, or the like, in combination, uprights, a horizontally arranged cross head at its ends confined to said uprights to reciprocate longitudinally thereof, means applied to the ends of said cross head to reciprocate the same vertically, a knife bar carried by and arranged below said cross head and confined to said uprights to reciprocate with said cross head and provided with a longitudinal cutting knife, counterbalancing weights slidable vertically on said uprights, a cross shaft mounted in said uprights and provided with pinions, and vertical racks carried by said counter weights and said cross head and meshing with said pinions.

5. An apparatus for simultaneously slicing veneer from opposite sides of a bolt, comprising a pair of opposite feed carriages, mechanisms for simultaneously feeding said carriages with uniform step by step movements toward each other, veneer cutting means carried by said carriages, respectively, for cutting transversely through the bolt in planes at right angles to the axis of the bolt, and means for maintaining a bolt between said carriages.

6. A pair of opposing carriages movable toward and from each other, horizontally-disposed veneer cutting knives mounted in said carriages to simultaneously cut veneers from opposite sides of a horizontal bolt arranged between said carriages, in combination with means for simultaneously and uniformly feeding said carriages toward each other, means whereby the relative relations of the bolt and knives are periodically changed in planes at right angles to the axis of the bolt to effect the simultaneous draw cuts of said knives transversely through said bolt, and operating devices.

7. In a veneer machine, or the like, means to fixedly hold a bolt in position to be operated on, in combination with a pair of feed carriages between which said bolt is adapted to be held by said means, feed mechanism for simultaneously and uniformly feeding both carriages toward said bolt, knives car-

ried by said carriages and having their longitudinal axes parallel with the longitudinal axis of said bolt, and mechanism for simultaneously reciprocating said knives on their operative strokes in a direction at right angles to the axis of the bolt.

8. A pair of feed carriages, means for simultaneously feeding the same toward each other, horizontally-disposed reciprocating and endwise movable veneer cutting knives mounted in said carriages, and means for simultaneously and uniformly reciprocating said knives on their cutting strokes in a direction at right angles to the axis of a bolt being operated on, in combination with means to hold a bolt horizontally between said carriages in position to have its opposite sides simultaneously operated on by said knives.

9. A pair of parallel opposed feed carriages, means for feeding said carriages toward each other, each carriage provided with an elongated reciprocating veneer cutting knife and with a coöperating presser bar arranged adjacent to the cutting edge of said knife, said knives and presser bars of the two carriages being parallel and arranged oppositely each other, and mechanism for reciprocating said knives and presser bars together on their cutting strokes in a direction at right angles to the axis of the bolt being operated on, in combination with means to hold a bolt between the carriages in position to have its opposite sides simultaneously operated on by both cutting knives and presser bars.

10. An elongated horizontal track, a pair of feed carriages arranged on opposite portions of said track and horizontally movable thereon, feed mechanism for simultaneously moving said carriages in opposite directions on said track toward and from the central portion thereof, similar parallel oppositely-arranged horizontal vertically-reciprocating veneer cutting devices mounted in said carriages, means for simultaneously actuating said cutting devices on their operative strokes, in combination with means to hold a bolt in a horizontal position approximately parallel with and between the cutting devices of said carriages and in position to be operated on thereby.

11. In apparatus for slicing veneers from bolts, in combination, means for holding a bolt exposed to permit simultaneous reduction thereof from opposite sides toward its center by the removal of veneers therefrom, veneer cutting devices operative to simultaneously act on opposite sides of the bolt in the same direction at right angles to the axis of the bolt in removing veneers from said bolt, whereby the tendency of the bolt to rotate in one direction under the cutting action of one cutting device will be neutralized by the simultaneous action of the other cutting device tending to rotate the bolt in the opposite direction, and operating mechanisms.

12. In a veneer machine, or the like, in combination, a base provided with horizontal parallel tracks, upright feed carriages, means for feeding said carriages on said tracks in opposite directions, vertically reciprocating veneer cutting devices mounted in said carriages, simultaneously rotating gears carried by said base, actuating pitmen from said gears to said cutting devices of the carriages to simultaneously and uniformly reciprocate said cutting devices, and means for holding a bolt between said carriages and in position to have its opposite sides simultaneously operated on by said cutting devices.

13. A machine for cutting veneers from opposite sides of a bolt held against rotation by end dogs, comprising a pair of separate opposed feed carriages movable in opposite directions toward and from each other, veneer cutting devices mounted in said carriages at the inner sides thereof, operating means for simultaneously reciprocating the cutting devices of said two carriages to simultaneously sever veneers from the opposite sides of a bolt located midway between said carriages, and feed mechanism actuated by said operating means and acting on both of said carriages to uniformly and simultaneously feed the same step by step toward the bolt during the intervals between the cutting strokes of said cutting devices.

14. A machine for cutting veneers from opposite sides of a bolt, comprising means for holding a bolt, a pair of feed carriages arranged at opposite sides of said bolt and provided with devices for simultaneously cutting veneers from opposite sides of said bolt, means for simultaneously operating said cutting devices, one of said carriages having a projection, means for simultaneously feeding said two carriages in opposite directions toward said bolt, said feeding means comprising a ratchet wheel, a pawl for periodically rotating said ratchet wheel a fixed distance and devices for actuating said pawl, and a stop mechanism comprising a member for moving said pawl from operative relation with respect to said wheel, and a lever for operating said member, said lever having a portion arranged in the path of said projection and adapted to be operated thereby.

15. In combination a frame providing horizontal guideways extending in opposite directions from the dogging position, dogging mechanism for engaging the ends of a bolt and holding the same fixed in the dogging position exposed for the simultaneous cutting of veneers from the opposite sides thereof, a pair of feed carriages movable on said ways in opposite directions and ar-

ranged at opposite sides of said dogging position, said carriages being provided with veneer cutting devices for simultaneously cutting veneers from opposite sides of said bolt, operating means common to said cutting devices for simultaneously reciprocating the same, a rotary screw feed shaft parallel with said guideways and common to said two carriages to feed the same uniformly and in opposite directions toward said bolt when rotated in one direction and away from said bolt when rotated in the opposite direction, means to continuously rotate said shaft while moving said carriages on their return strokes, and means for periodically rotating said shaft to impart step by step uniform feeding movements of said two carriages toward said bolt.

16. In combination, means for fixedly holding the bolt exposed so that veneers can be cut from its opposite sides, a pair of feed carriages arranged at opposite sides of said bolt and provided with veneer cutting devices for simultaneously cutting veneers from opposite sides of the bolt, and feed mechanism common to said two carriages for simultaneously advancing the same in opposite directions toward the bolt with uniform step by step movements, said feed mechanism comprising a rotary ratchet wheel, a movable member provided with a pawl for periodically rotating said ratchet wheel, means for actuating said movable member, a vertically swingable pawl lifting member, means for swinging the same to lift said pawl from said wheel, and a manually controlled catch for detachably holding said member with the pawl elevated from the wheel.

17. In combination, in a veneer machine or the like, a pair of feed carriages, similar cutting devices carried thereby, means for simultaneously operating the cutting devices of both carriages on their cutting and return strokes to simultaneously sever veneers from opposite sides of a bolt held between said carriages, feed mechanism to simultaneously and uniformly move said carriages on their feed strokes, step by step actuating devices for said feed mechanism having operative connection with and driven by said means for operating said cutting devices, and stop mechanism for throwing said feed mechanism out of operative connection with said actuating devices to simultaneously stop both carriages when said carriages reach their limits of feeding movement toward each other on the reduction of the bolt.

18. In combination, a veneer machine, a pair of feed carriages provided with veneer cutting devices, means for simultaneously operating said devices to simultaneously sever veneers from opposite sides of a bolt located and fixed between said carriages, feed mechanism to simultaneously and uniformly actuate said carriages step by step toward said bolt, and stop mechanism for throwing said feed mechanism out of action when said carriages have reduced said bolt, said stop mechanism being actuated by one of said carriages as it reaches a predetermined position.

19. In combination, in a veneer machine or the like, a feed carriage, reciprocating cutting mechanism carried thereby, operating means for said cutting mechanism, a feed screw for feeding said carriage, a rotary shaft geared to said screw for operating the same to move said carriage, a ratchet wheel on said shaft, a swinging arm having a pawl to run freely over said wheel when the arm is swung in one direction and to rotate said wheel and its shaft when the arm is swung in the opposite direction, a reciprocating slide for rocking said arm, means whereby the reciprocation of said slide can be varied to vary the feed, said slide provided with an arm, said cutting mechanism operating means embodying a portion to periodically engage said arm and reciprocate said slide, and means for moving said pawl from operative relation with respect to said wheel to stop the carriage feed.

20. In combination, in a veneer machine, means to hold a bolt in position to be operated on, feed carriages movable toward and from the bolt and arranged at opposite sides thereof and provided with veneer cutting devices for cutting veneers from opposite sides of the bolt, mechanism for simultaneously actuating said cutting devices during the feeding movements of the carriages toward the bolt, and mechanism common to said carriages for simultaneously feeding the same in opposite directions comprising a rotating member carried by said cutting device actuating mechanism and a slide periodically engaged and moved by said member.

21. In combination, a slideway, a feed carriage movable thereon, a reciprocating cutter carried by said carriage, a rotary driving member having eccentric actuating connection with said cutter, and step by step feed mechanism for said carriage actuated by said rotary driving member.

22. In a veneer machine, in combination, means to hold a bolt in position to have veneers cut from its opposite sides, a pair of opposing feed carriages arranged at opposite sides of said bolt, feeding means common to said carriages and arranged to simultaneously and uniformly move said carriages in opposite directions toward said bolt step by step, reciprocating veneer cutting devices carried by said carriages, operating means common to said devices for simultaneously moving them on their cutting strokes, and actuating devices for said

feeding means actuated by said operating means to cause a feeding movement of said carriages during each interval between the cutting strokes of said cutting devices, said actuating devices embodying an adjustable member whereby the length of said feeding movement can be varied.

23. In a veneer machine, in combination, a base, a feed carriage movable on said base with a step by step movement, a reciprocating veneer cutting mechanism mounted in said carriage, a rotary shaft mounted in the base and having eccentric pitman connection with said mechanism to reciprocate the same, feed mechanism for said carriage, and step by step actuating means for said feed mechanism operated by said shaft and comprising a slide and an adjustable stop therefor whereby the feed can be varied.

24. In a veneer machine, a frame providing longitudinal guide ways, alined dogs arranged transversely with respect to said guide ways and provided with means for causing said dogs to engage the ends of a bolt and hold said bolt transversely of said ways and exposed to permit simultaneous reduction thereof from opposite sides toward its center by the removal of veneers therefrom, said frame providing a vertical passage for the vertical movement of bolts to the dogging position between said dogs, a bolt elevator for moving bolts to said dogging position to be gripped by said dogs, feed carriages arranged at opposite sides of said dogging position and movable in opposite directions along said guide ways toward the bolt held by said dogs and provided with veneer cutting devices to simultaneously cut veneers from opposite sides of said bolt, and feed and actuating devices.

25. In a veneer machine, or the like, in combination, a base having fixed depressed horizontal supports, vertically-disposed housings hung on said supports, vertically-reciprocatory bolt-elevator slides vertically movable in said housings and adapted to move to elevated positions above the same, a slide-elevating-and-controlling shaft mounted in said housings and provided with operating and controlling means, elevated bolt-gripping means to which said slides are adapted to deliver the bolts, and means for delivering bolts to said slides when in their lowered position.

26. In a veneer machine, in combination, frame sides providing longitudinal guide ways, opposing feed carriages movable toward and from each other along said guide ways, veneering cutting devices carried by said carriages, said frame sides providing dogging-mechanism supports midway between said carriages, dogging mechanism carried by said supports and comprising alined bolt end engaging dogs arranged transversely of said sides, a bolt elevator and centering device vertically movable between said frame sides to elevate a bolt between said sides and into alinement with said dogs and to hold the same between said dogs until clamped thereby, actuating and controlling means for said elevator, feed mechanism for simultaneously feeding said carriages toward opposite sides of the bolt held by said dogs, and mechanism for actuating the veneer cutting devices of said carriages to simultaneously cut veneers from opposite sides of said bolt.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN SHELLENBERGER.

Witnesses:
J. N. McGHEE,
H. M. STARR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."