No. 876,292. PATENTED JAN. 7, 1908

W. M. BOENNING.

EDGE TRIMMER.

APPLICATION FILED JUNE 19, 1907. 5 SHEETS—SHEET 1.

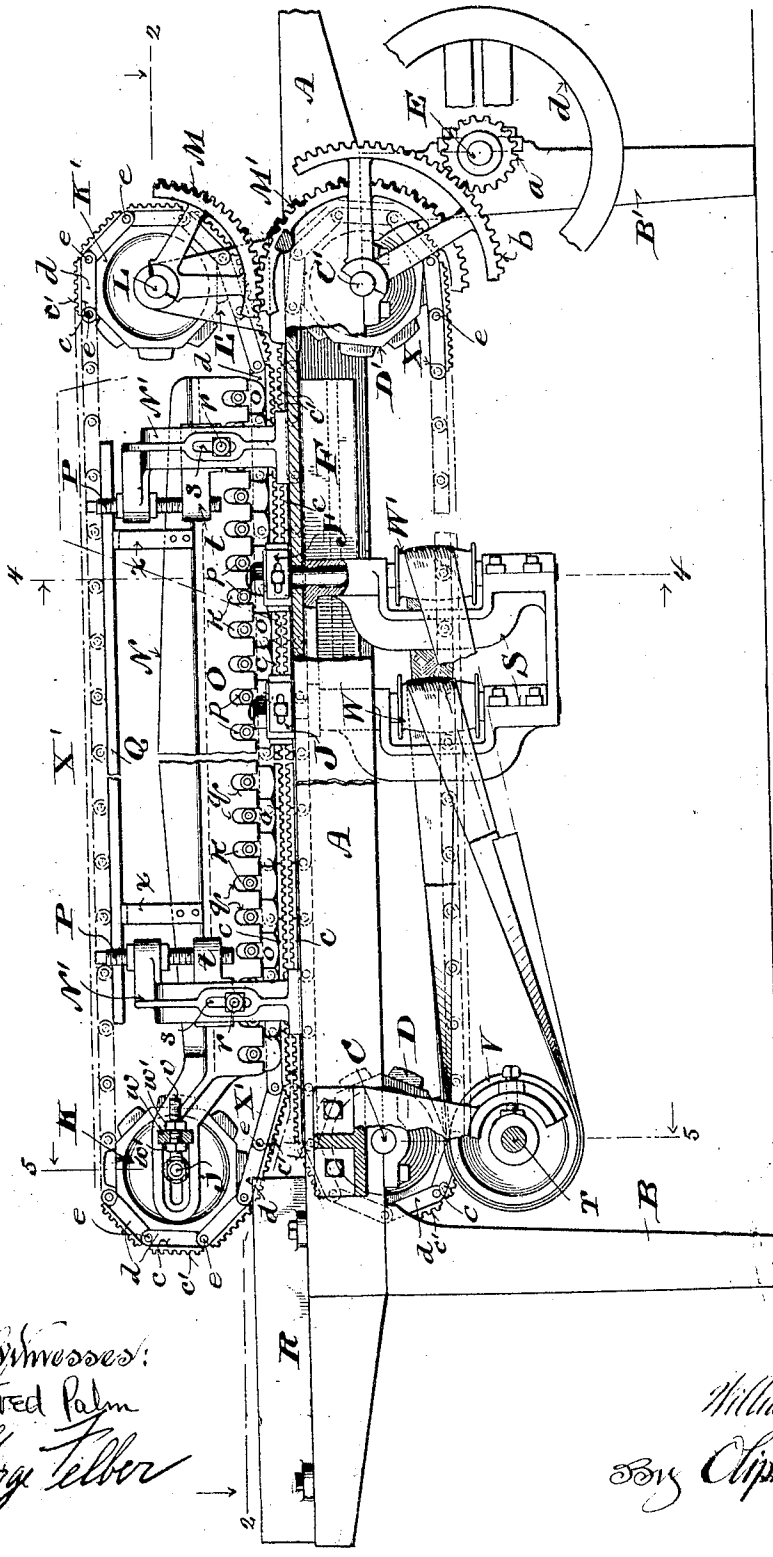


Fig. 1

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Fred Palm
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5 SHEETS—SHEET 2

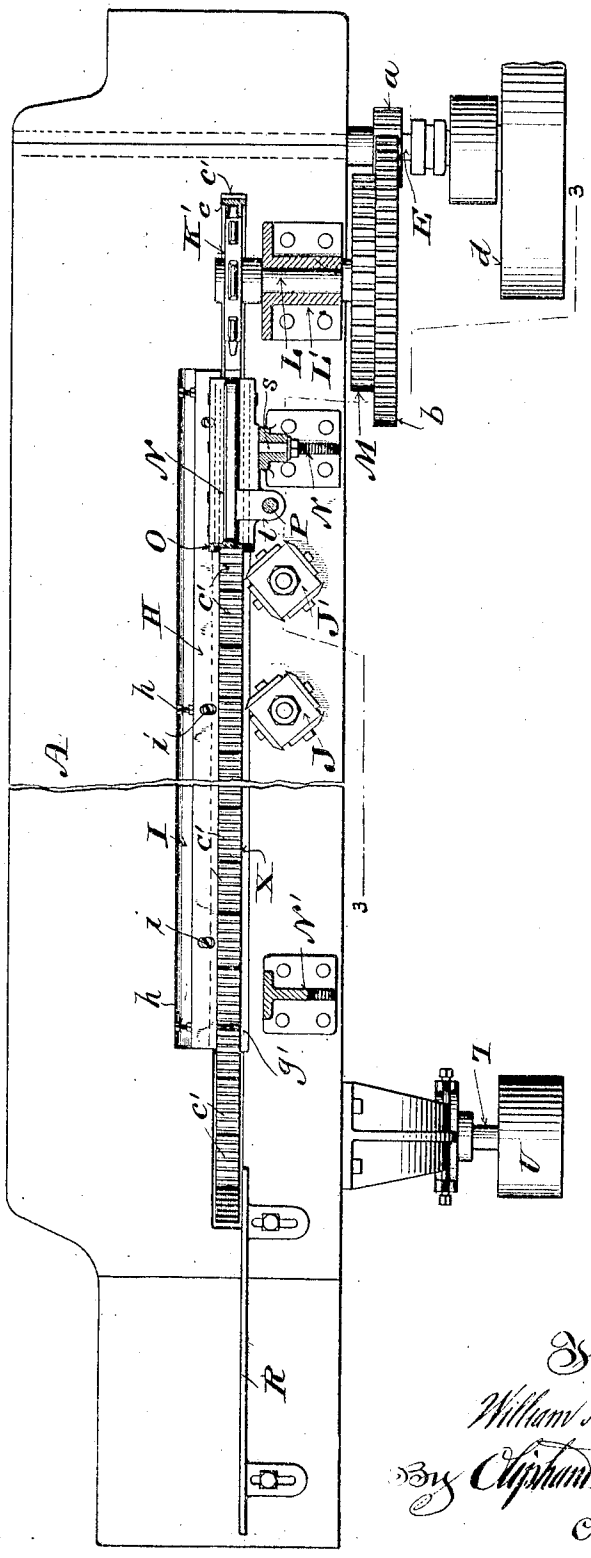


Fig. 2.

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5 SHEETS—SHEET 3

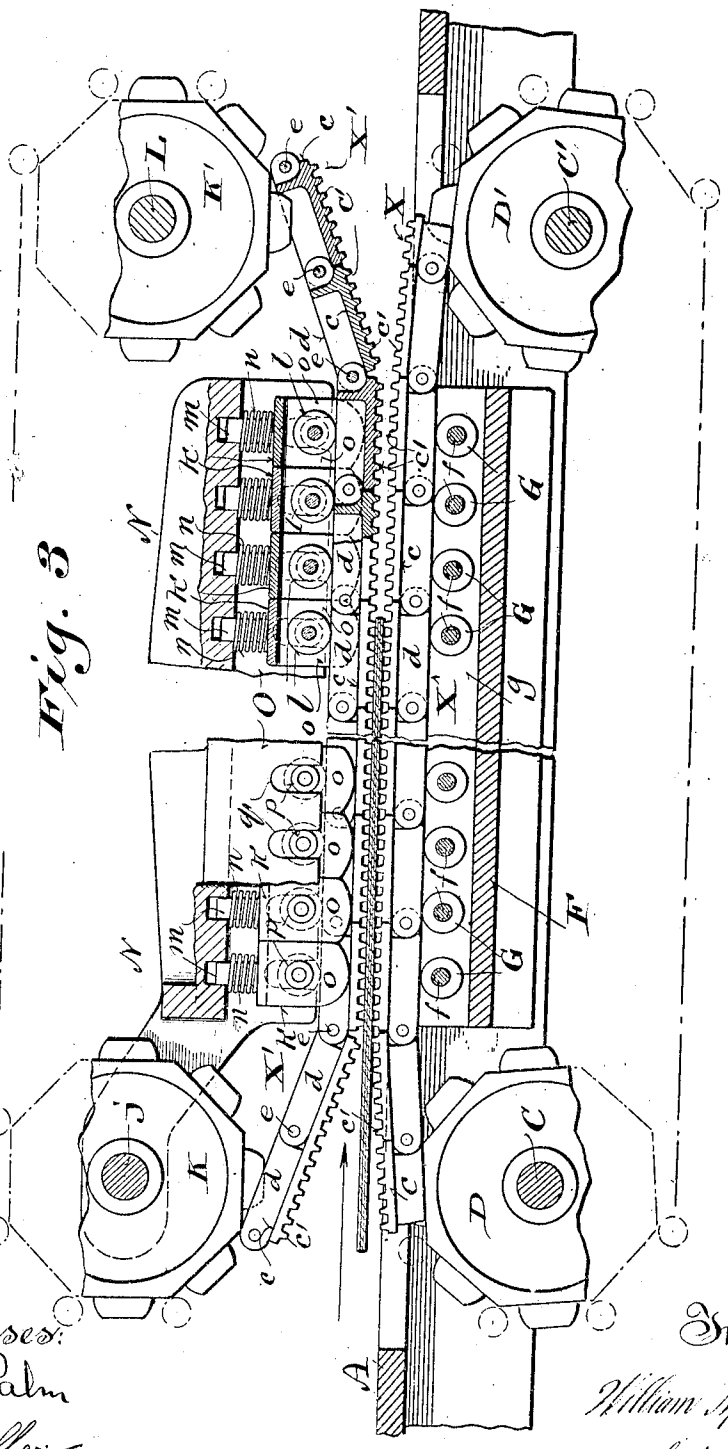


Fig. 3

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6 SHEETS—SHEET 4.

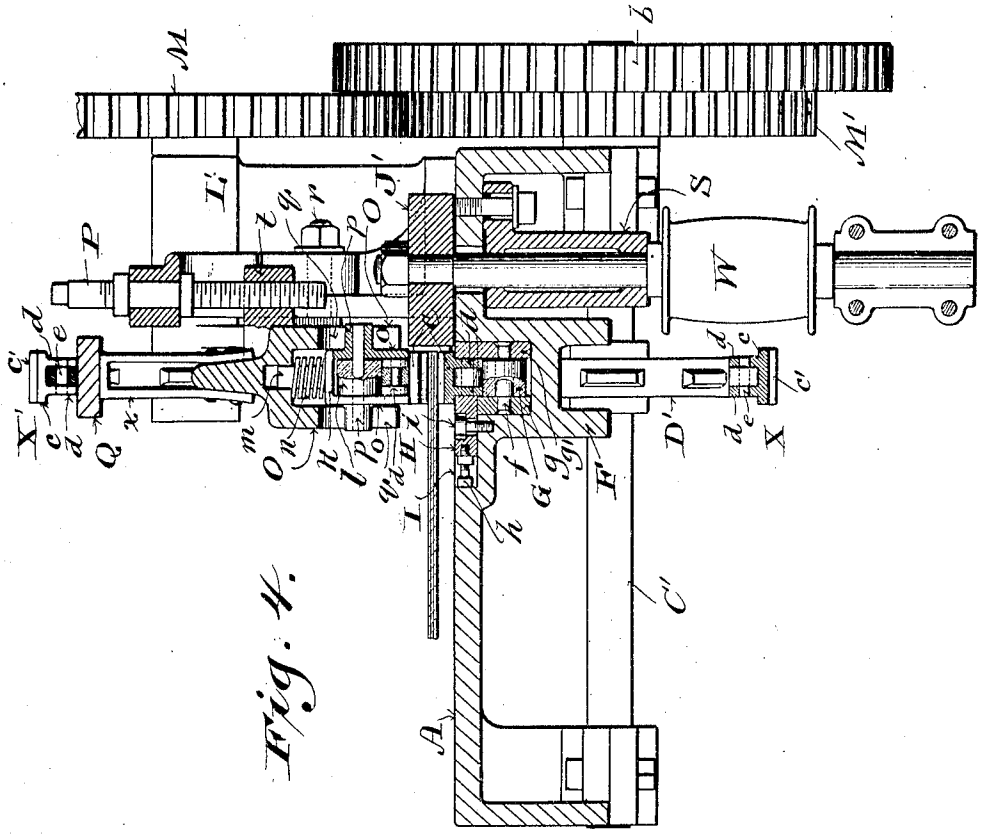


Fig. 4.

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5 SHEETS—SHEET 5.

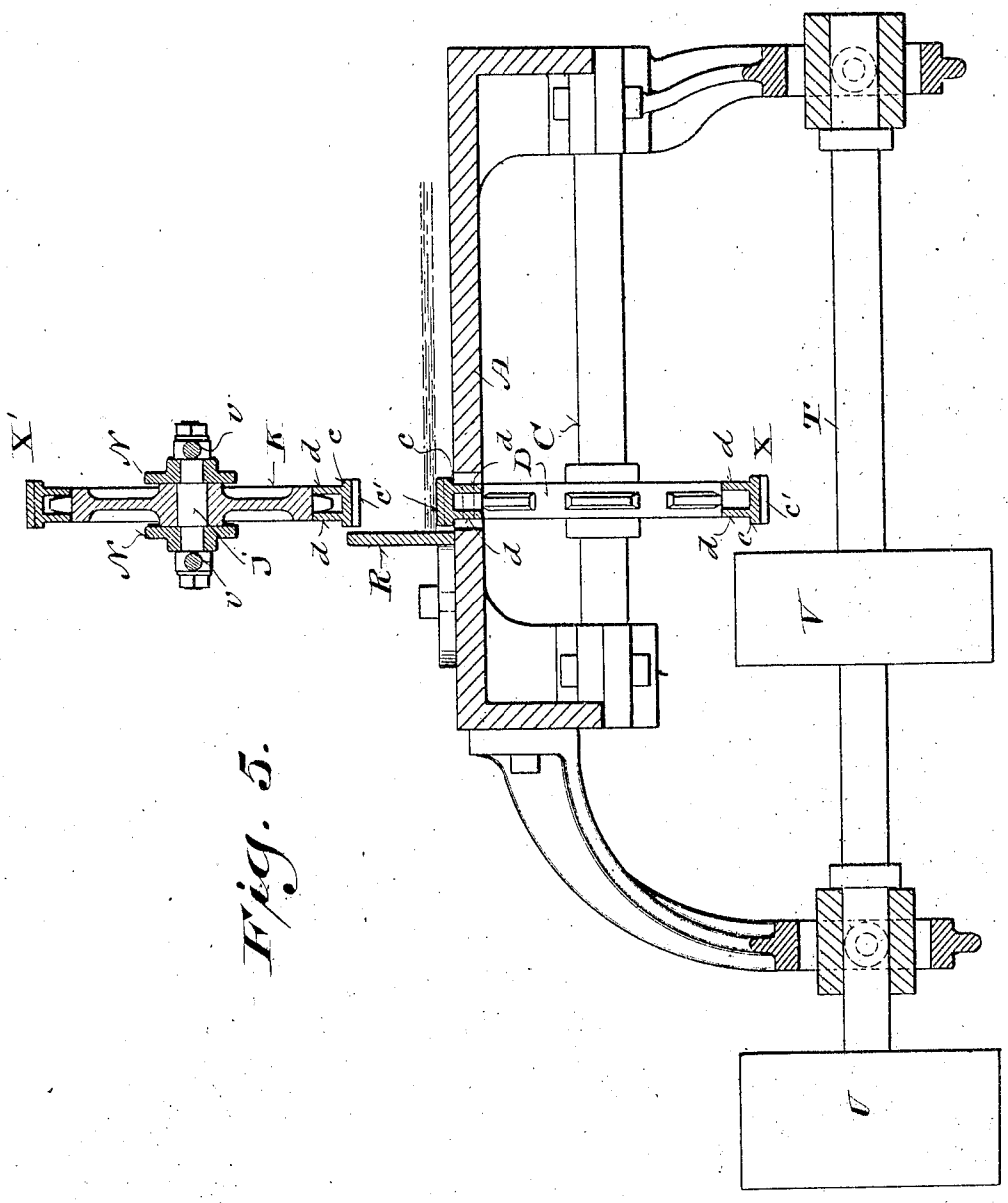


Fig. 5.

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UNITED STATES PATENT OFFICE.

WILLIAM M. BOENNING, OF MANITOWOC, WISCONSIN, ASSIGNOR TO THE VENEER MACHINERY COMPANY, OF GRAND RAPIDS, MICHIGAN, A CORPORATION OF MICHIGAN.

EDGE-TRIMMER.

No. 876,292. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed June 19, 1907. Serial No. 379,707.

To all whom it may concern:

Be it known that I, WILLIAM M. BOENNING, a citizen of the United States, and resident of Manitowoc, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Edge-Trimmers; and I do hereby declare that the following is a full, clear, and exact description thereof.

The object of my invention is to provide a simple, effective and durable planing machine especially adapted to trimming the edges of wood-veneer blanks, said trimming being a necessary step in the process of veneer manufacture for the purpose of obtaining a perfect edged unitary joint preparatory to abutting the edges of the blanks together and thereafter gluing the same, the construction and arrangement of the mechanism of the machine being such that the veneer blanks or strips are securely clamped one upon the other, between endless traveling carriers and feed past revoluble cutter-heads, which cutter-heads true and smooth the veneer edges.

The invention therefore consists in various peculiarities of construction and combination of parts as hereinafter fully described with reference to the accompanying drawings and subsequently claimed.

In the drawings: Figure 1 represents a side elevation of a machine embodying the features of my invention, parts being broken away and parts in section to better illustrate the details of construction; Fig. 2, a plan view of the same partly broken away and in section, as indicated by line 2—2 of Fig. 1; Fig. 3, an enlarged detail sectional elevation of the feed-mechanism, the section being indicated by line 3—3 of Fig. 2, and Figs. 4 and 5, are enlarged cross-sections of the machine, as indicated by lines 4—4 and 5—5 respectively of Fig. 1.

Referring by letter to the drawings, A indicates a table supported by legs B, B′ and provided with front and rear bearings for shafts C, C′ respectively, which shafts have secured thereto sprocket-wheels, D, D′, that carry an endless driven link-belt X. The link-belt receives its drive from a counter shaft E, which counter shaft is mounted in suitable bearings on the rear table legs B′ and carries a pinion *a* that meshes with a gear-wheel *b* fast on the shaft C′, there being a transmission pulley *d* also secured to the counter-shaft that is belted to any source of power.

The sprocket-wheels D, D′ are located beneath the table in such a position that the work-engaging run of the link-belt projects slightly above the top of said table, which table is slotted to permit said link-belt to pass therethrough, there being a longitudinal trough F formed under the slotted portion of the table intermediate of the sprocket-wheels through which said work-engaging run of the link-belt travels as it passes from its idle to its driven sprocket-wheel. The faces *c*, of the belt-links are provided with transverse teeth or corrugations *c′*, which serve as a gripping-surface for the material being fed, the inner surface or bottom of said links being formed with parallel longitudinal ribs *d* terminating in apertured ears, which ears are coupled together by pintles *e* in the usual manner. The link-belt is supported in the trough by a series of roller G, on which the edges of the link-ribs *d* are arranged to rest, the rollers being loosely mounted upon shouldered studs *f* that also serve as retaining stays for side-strips *g*, *g′*, to which they are riveted. These side-strips together with the rollers form a separable or detachable guide which is fitted into the trough F to prevent side-play of the belt. The side-strip *g′* projects upward flush with the table-top, while the opposite strip *g* is cut away to permit a gage-strip H to be snugly fitted against the adjacent ribbed portions of the belt-links, the opposite parallel rib-portions being in contact with the inner face of the side-strip *g′*, all of which construction is best shown in Fig. 4 of the drawings.

Provision is made for adjusting the gage-strip by means of set-screws *h*, having their heads abutting the wall of a channel I in the table-top, the shanks of the set-screws being in threaded-connection with said guide-strip. The aforesaid guide-strip is fitted into the channel flush with the table-top, and secured to the table by screws *i*, the shanks of which screws pass through shouldered slots in the guide-strip, while the heads of said screws are sunk therein, the slots permitting movement of the aforesaid guide-strip when the screws are loosened to accomplish the adjustment.

Located above the table-top is another driven link-belt X′ similar to that previously described, the lower or work-engaging run of which belt is disposed directly above the upper or work-engaging run of the lower link-belt X, the two link-belts being driven in opposite directions and at the same speed, so that their respective work-engaging runs will travel together and in the same direction, thereby practically forming a vise between the opposite corrugated faces of the links for the purpose of gripping lengths of veneer-strips and feeding the edges of the same past cutter-heads J, J′, to be hereafter described.

The rear sprocket-wheel K′, over which the upper link-belt travels, is fast on a shaft L, which shaft is mounted in a bracket L′ secured to the table. To the outer end of this shaft is secured a gear-wheel M that meshes with a similar gear-wheel M′ carried by the shaft C′, through which gears motion is imparted to the said upper link-belt. The front end of the link-belt X′ is supported upon an idle sprocket-wheel K, the latter being mounted upon a stud *j* secured in a forked extension of a presser-frame N, which frame is suspended directly above the work-engaging run of said link-belt intermediate of its sprocket-wheel, by standards N′ fast to the table. The presser-frame is formed with a longitudinal rectangular channel, into which is nested a series of independently yielding housings *k*, which carry anti-friction roller *l*, arranged to impinge against the ribs of the adjacent belt-links and thus form a backing for the work-engaging run of the link-belt. These housings have shank-extensions *m* which project into sockets of the channel-roof, between which roof and the base of the housings are interposed coiled springs *n* that encircle the shank-extensions. Wings *o* of the housings, between which the anti-friction rollers *l* are located, depend below said rollers and form guides for the belt-links, the ribs of which links fit snugly therebetween, there being apertured lugs *p* extending from the wings into which are secured the pintles of the anti-friction rollers. The housings *k* are fitted between side-walls O of the presser-frame and are vertically guided therein by their lugs *p*, which lugs project through slots *q* of said walls, thus together with the socketed shank-extensions permitting free vertical motion to the said housings together with the rollers.

From the foregoing description it will be understood that should strips of veneer be inserted between the corrugated face of the pair of link-belts constituting the feed-mechanism, the said veneer would be firmly clamped therebetween, pressure being exerted from above by the spring-controlled anti-friction rollers, upon the work-engaging run of the upper link-belt, and resisted by the links of the work-engaging run of the lower link-belt, the last named links being backed up by the rollers G over which they travel as previously stated.

In order that the tension or initial pressure exerted upon material being fed may be regulated in accordance with its thickness, the presser-frame N is arranged to be vertically adjusted upon its supporting standards N′, said adjustment being attained by means of bolts *r*, which bolts project from said presser-frame and are fitted into slots *s* of the standards, to which they are secured by means of clamping nuts. The upper end of said standard being formed with hubs in each of which is revolubly mounted a threaded-spindle P. The lower ends of these spindles are in threaded-connection with lugs *t* of the presser-frame, the upper ends of said spindles being squared for the reception of a suitable tool by which to raise and lower said presser-frame, after which operation the nuts of bolts *r* are securely set to bind the parts together. When the presser-frame is adjusted, the slack of the endless link-belt is regulated by moving the idle sprocket-wheel K in or out in its forked extension, which extension is provided with slotted openings *u* for the reception of the stud *j*, there being eye-bolts *v* fitted over said stud having threaded ends adapted to pass through apertured ears *w* projecting from the forked extensions and held in adjusted position therewith by means of lock-nuts *w*′. Thus it will be seen that the idle sprocket-wheel rises or falls with the presser-frame, while the driving sprocket-wheel K′ remains in its fixed position with relation to the table and its driving-gears, both sprocket-wheels being at a sufficient height from the table-top to permit the work engaging run of the link-belt to form a flared throat with relation to the work engaging run of the lower belt, whereby the material to be edged may readily be inserted therebetween and discharged from the rear of the driving sprocket-wheels upon the table.

A supporting-rail Q for the slack-side of the link-belt X′ is secured to the presser-frame by braces *x*, and the front or feed-end of the table is provided with an adjustable gage R against which the stock or veneer edges are abutted and guided to the gripping faces of the link-belts.

Each of the vertical cutter-heads J, J′ has its spindle mounted in a double bracket S, which bracket is adjustably secured to the table, the latter being slotted to permit passage of the spindles therethrough. The first or roughing cutter-head J is adjusted a shade farther from the edge of the links of the belts than that of the finishing cutter-head J′, so that the two will gradually reduce the

edge to be trimmed to a perfectly smooth finish. The cutter-heads receive their drive from a shaft T mounted in hangers at the forward end of the table, the said shaft being provided with a drive-pulley U and another pulley V, which pulley has nested thereon a pair of belts that pass over and around the spools W, W' of the cutter-head spindles.

In the operation the veneer blanks to be edged are placed one upon the other and after being butted against the gage are shoved into place between the toothed surfaces of the endless link-belts, the latter gripping the veneer firmly, pass it on to the cutter-head, which trims the adjacent edges that protrude slightly beyond the edges of the chain-links, the said links, by means of the presser-frame structure in the meantime holding said veneer, as in a vise, until such time as it passes beyond the link-belts and drops upon the table to the rear of the machine.

I claim:

1. An edge-trimmer comprising a pair of endless carriers having their work engaging runs disposed one above the other, means for adjusting the work engaging run of one of the carriers with relation to the other, means for driving the carriers at the same speed, and a driven cutter-head arranged adjacent to the drive-sides of the carriers.

2. An edge-trimmer comprising a table, a trough in the table, an endless driven link-belt in fixed relation with the table, its work engaging run being arranged to travel in the trough, supporting means for the work engaging run, a vertically adjustable endless driven link-belt carried by the table, its work engaging run being opposite the work engaging run of the first named link-belt, driving-gears in connection with the link-belts, and a vertically driven cutter-head disposed adjacent to drive-sides of said link-belts.

3. In an edge-trimmer, a table having a trough therein, an idle and driven sprocket-wheel in fixed relation with the table at opposite ends of the trough, an endless link-belt carried by the sprocket-wheels, arranged to travel in the trough, each link of the belt being provided with a corrugated outer face, supporting rollers in the table-trough for the link-belt, side-guides for said link-belt in connection with said trough, a driven sprocket-wheel disposed above the first named drive-sprocket and in fixed relation with the table-top, a presser-frame adjustably secured to said table-top, an idle sprocket in connection with the presser-frame, an endless link-belt carried by the last named driven and idle sprocket-wheels, the link-members of the belt being provided with corrugated outer faces, spring-controlled anti-friction rollers carried by said presser-frame and opposing the work engaging run of the last named link-belt, and roughing and finishing driven cutter heads secured to the table adjacent the driven-sides of said link-belts.

4. In an edge-trimmer having a table, an endless driven belt comprising a series of links having corrugated outer faces, the work engaging run of which belt is arranged to travel over the table, and supporting-rollers for the work engaging run of the belt; the combination of standards secured to the table, an adjustable presser-frame in connection with the standards, the presser-frame being disposed above and alined with the work engaging run of the belt, a channel in said presser-frame, spring-controlled housings fitted in the channel roller carried by the housings, an endless driven belt comprising a series of links having corrugated outer faces, the drive-side of which belt is arranged to travel in the housings, and driven cutters disposed at the work engaging runs of the belts.

5. In an edge-trimmer comprising driven endless carriers having corrugated faces, the work engaging runs of the carriers being oppositely disposed; the combination of a pair of rotary cutter-heads disposed adjacent to the work engaging runs of the carriers, driving-gears connecting the carriers, and means for adjusting the work engaging runs of said carriers with relation to each other.

6. In an edge-trimmer comprising a table, and an endless driven carrier supported by the table, the combination of a driven upper endless carrier, a presser-frame for the work engaging run of the latter, a channel in the presser-frame, vertical slots in the side-walls of the channel, central apertures in the top of said channel, housings fitted between the channel side-walls, having depending wings, apertured hubs projecting from the wings into the vertical side-wall slots, studs projecting from the housings into the top apertures of said channel, springs surrounding the studs, pintles fitted in the apertured hubs of the aforesaid housings, and rollers carried by the pintles.

7. In an edge-trimmer, a table, a longitudinal trough in the table, strips in the trough, studs connecting the strips, rollers carried by the studs, an endless driven carrier arranged to travel over the rollers, an adjustable strip in connection with the table, adapted to engage the side of the carrier in its travel through the trough, and a revoluble cutter-head disposed adjacent to said trough.

8. In an edge-trimmer comprising a pair of endless driven carriers, alined one above the other, the work engaging runs of the carriers being adjacent each other, whereby gripping jaws are formed, lateral guides for said work engaging runs of said carriers, a pressure regulating device in connection with the

work engaging run of one of the carriers, a fixed support for the work engaging run of the other carrier, and a fixed rotary cutter-head disposed adjacent to one edge of said work engaging runs of the carriers.

In testimony that I claim the foregoing I have hereunto set my hand at Manitowoc in the county of Manitowoc and State of Wisconsin in the presence of two witnesses.

WM. M. BOENNING.

Witnesses:
E. H. LUDWIG,
MAX DORN.