

Sept. 6, 1938.

F. HERR

2,129,276

PRESS FOR CONNECTING VENEER OR SIMILAR STRIPS

Filed Aug. 26, 1935

3 Sheets-Sheet 1

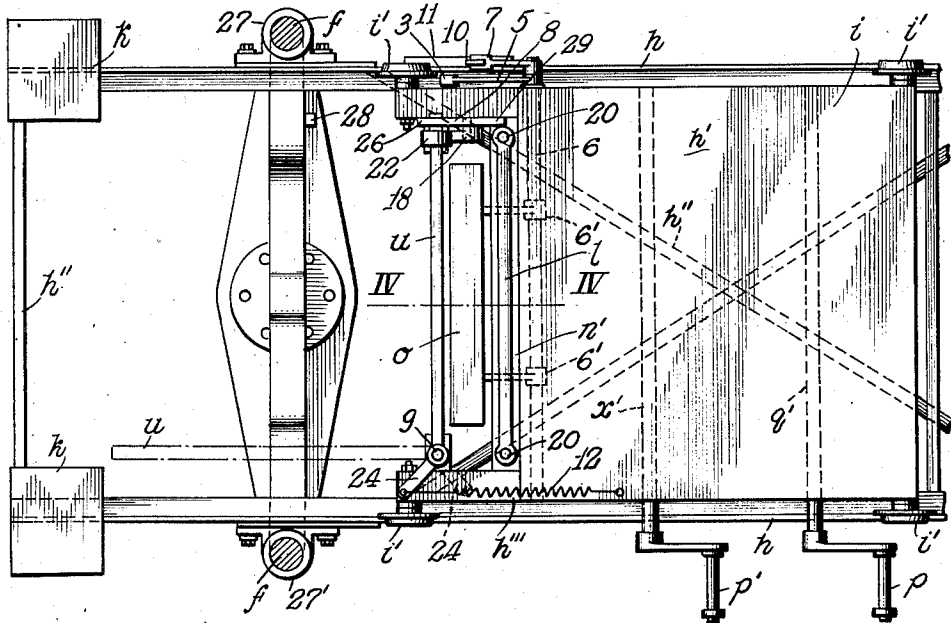


Fig. 2.

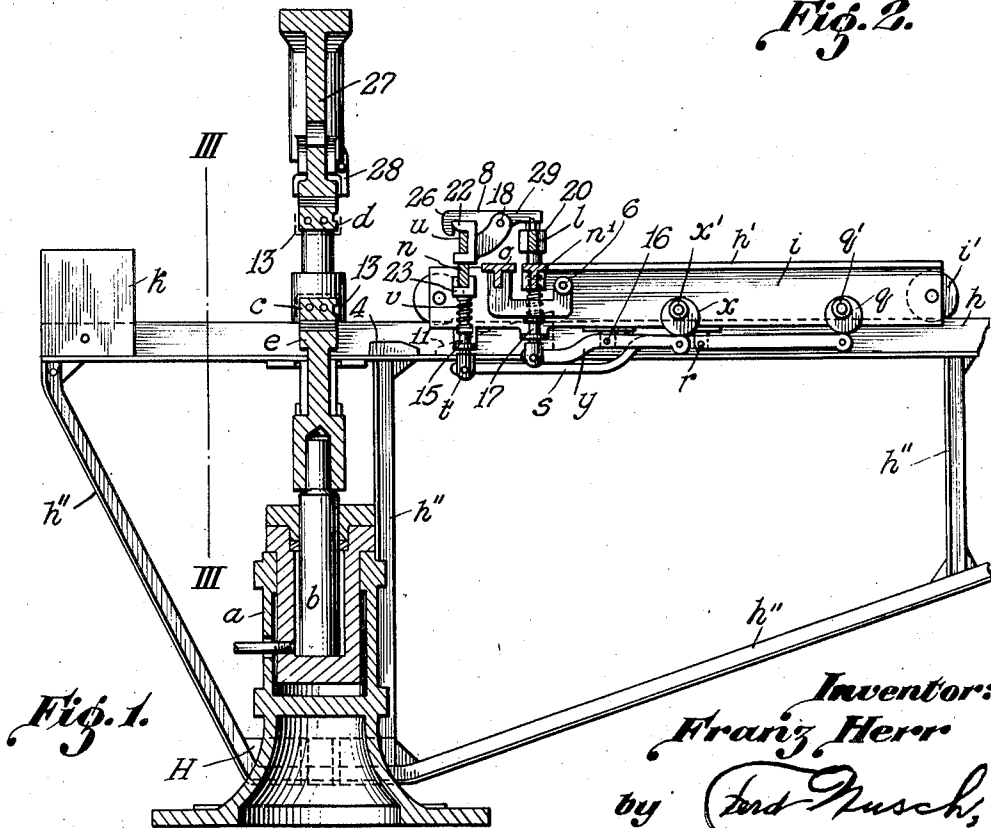


Fig. 1.

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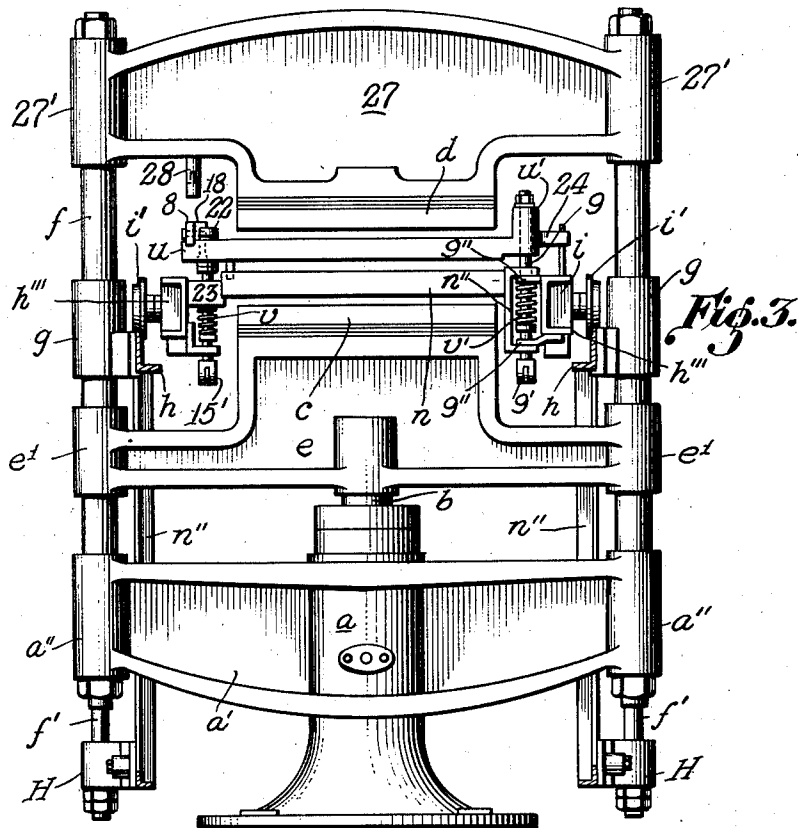
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3 Sheets-Sheet 3

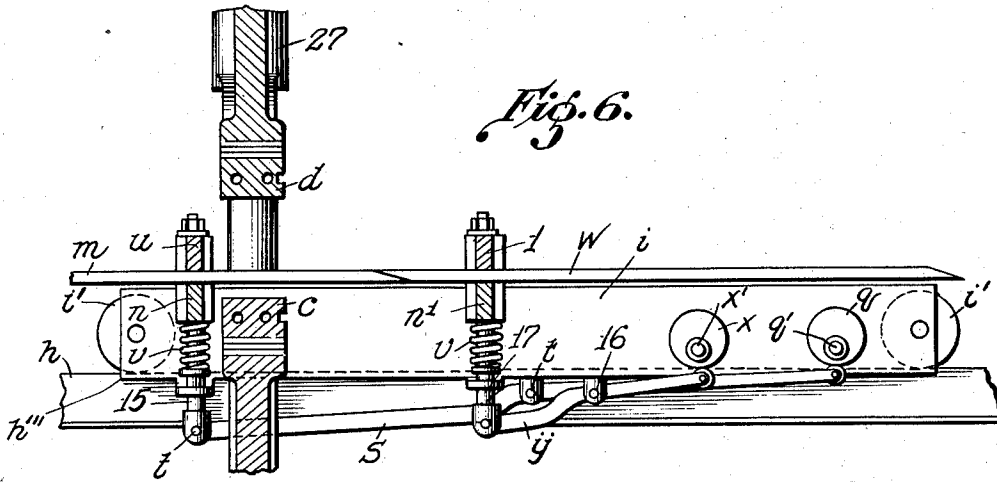


Fig. 6.

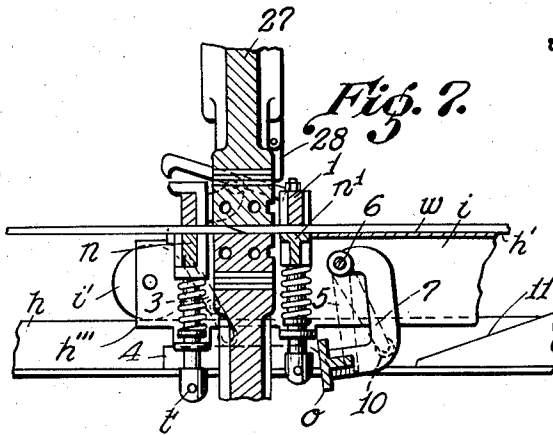


Fig. 7.

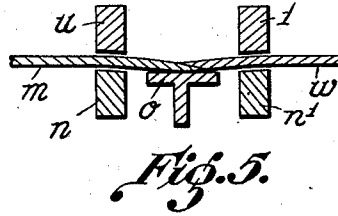


Fig. 5.

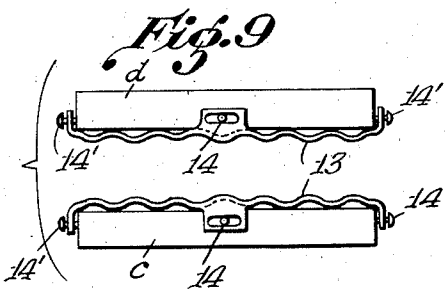


Fig. 9.

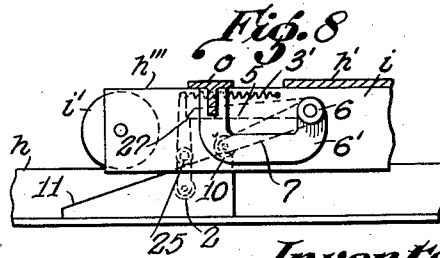


Fig. 8.

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UNITED STATES PATENT OFFICE

2,129,276

PRESS FOR CONNECTING VENEER OR SIMILAR STRIPS

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Application August 26, 1935, Serial No. 37,954
In Germany August 27, 1934

6 Claims. (Cl. 144—281)

This invention relates to a press for connecting the cross-grain edges of veneer, leather, linoleum and similar strips.

Two strips of veneer meeting in longitudinal direction have heretofore been united in a continuous operation by first overlapping the facing edge portions of the two strips to be united, then chamfering at the overlapped edges for the production of the scarf edge, to coat the butt-edges with an adhesive and to finally convey the strips to a device by which the joint is subjected to the action of pressure and heat. The method is carried out either by arranging the strips in two parallel piles and then pushing the uppermost strip of the one pile transversely to its longitudinal direction, over a wall separating the piles until it slightly overlaps the uppermost strip of the other pile, or by lifting the uppermost strip of a pile of strips and pushing it forward up to a stationary abutment to bring its front portion upon the rear portion of the strip which has been previously pushed forwardly. The machines for carrying out this automatic method are very complicated and have, for this reason, not been adopted by the trade. Experience has shown, that it is possible to easily glue together with the blunt butt-edged veneer strips meeting in longitudinal direction.

These machines are also not adapted for joining and gluing very thin and undulated veneers, as the thin veneers are difficult to handle and on the undulated veneers the oblique cut is very irregular.

The cross-grain edges, that is, edges abutting transversely to the direction of the grain have hitherto never been glued mechanically, although this would be very economical. During the round peeling of the logs short veneers of different lengths are produced which up to the present have been considered as waste. The present invention has for its object the almost complete utilization of these waste strips for the production of veneer strips of any desired length, which by the gluing of their longitudinal edges, can be united to any desired width so that they are suitable for the production of ply-wood plates.

Another object of the invention is to glue together to form veneers of any desired length, the veneers which for economical or technical reasons have been peeled in short length.

The press according to the invention comprises a slidable carriage on which two pairs of counter-shiftable clamping beams are arranged by means of which the veneer strips previously chamfered on the cross-grain edges and pressed for gluing are clamped away from the gluing point and then run into the press wherein the joint is subjected to the influence of pressure and heat.

An embodiment of the invention will be herein-

after described with reference to the accompanying drawings, in which:

Figure 1 shows a hydraulic joining machine in elevation and partly in longitudinal section,

Figure 2 is a top plan view, partly in section, of the machine shown in Figure 1,

Figure 3 is a cross-sectional view taken on line III—III of Figure 1,

Figure 4 is a detail sectional view taken on line IV—IV of Figure 2 and on an enlarged scale,

Figure 5 is a fragmentary sectional view showing the co-acting clamping and backing beams with the gripping edges thereof inclined,

Figure 6 is a fragmentary longitudinal sectional view showing a part of the press,

Figure 7 is a fragmentary sectional view similar to Figure 4 showing the press beams in their active position,

Figure 8 is a fragmentary detail sectional view similar to Figure 7 showing the work support in its elevated position, and

Figure 9 shows in elevation the press plates of the press equipped with undulated springs.

Referring now to the drawings, the press is provided with a hydraulic cylinder *a* forming its base. A bracket *a'* is cast integral with the cylinder *a* and has eyes *a''* at both ends for the reception of a pair of round uprights or slide bars *f*. A press table *e* is secured to the upper end of a piston *b* in the cylinder *a* and is equipped with eyes *e'* to slide on the uprights *f*. A pair of sleeves *g* is also mounted to slide on the uprights *f* and each sleeve supports a rail *h* of angular cross-section. The two rails make up a track and are braced by suitable structures *h''*. At the lower end of each bracing structure, a bracket *H* is secured with slides on the reduced end *f'* of the corresponding upright *f*. The counter-press table *27* is arranged above the track and is secured on the upper ends of the uprights *f* by a pair of eyes *27'*.

It is apparent that the piston *b* guided in a cylinder *a* carries the press table *e* and a press plate *c* which, as shown in Figure 1, has passages for a suitable heating fluid. A counter-plate, also heatable, is designated by *d* and secured to the lower end of the counter-press table *27*. A frame is slidably mounted on the uprights *f* by means of eyes *g* and consists essentially of two rails *h* covered by the plate *h'*. The carriage *i* is slidable on the rails *h*. Weights *k* balance the frame.

If desired, undulated springs *13* are placed on the operating surfaces of the press plates *c* and *d*, as shown in Figure 9, and in dotted lines, in Figure 1, and held by guide pins *14* at the sides, and *14'* at the ends of each plate engaging in elongated holes of lugs extending from the springs *13*. The springs *13* prevent sticking of the veneers, since the springs have been flattened down on the plates under the operating

pressure of the press, the springs returning into their initial positions when the pressure is removed for detaching the veneer.

The carriage *i* with four wheels *i'* and a top plate *h'* is placed on the rails *h*. The structure *h''* supports a pair of balance weights *k* as shown in Figure 1, against the carriage *i*. The journal of the inner or leading pair of wheels *i'* are secured to channel sections *h'''* projecting from the inner end of the carriage *i*.

Veneer clamping beams *l* and *u* are arranged on the carriage *i* above the level of its top plate *h'* and backing beams *n'* and *n*, respectively are arranged below the level for cooperation with the respective clamping beams *l* and *u*.

The rear clamping beam *l* is held in a fixed position by a pair of screw bolts 20 as shown in Figures 2 and 4 on the carriage *i* at the inner side of each lug *h'''*. Its backing beam *n'* is supported by a pair of bolts 17 at opposite ends, one of which is shown in Figure 4. A spring *z* is placed on each bolt 17 and bears at its upper end against a suitable abutment on the corresponding lug *h'''* while the lower end of the spring is engaged with a flange 21 on the bolt 17 adjacent the lower end thereof, tending to shift the bolt 17 in a downward direction. The bolts are normally locked against downward movement under the action of the spring *z* by locking levers *y* fulcrumed on the carriage *i* at 16. The front end of each lever *y* engages a pin 17' in a forked-shaped member at the lower end of the corresponding bolt 17, and its rear end is equipped with a roller *y'* bearing against a cam disk *x* under the reaction of the spring *z*. The two cam disks *x* are mounted on a transverse shaft *x'* in the carriage, with a crank *p'* keyed on one end of the shaft as shown in Figure 2.

The front clamping beam *u* and its backing beam *n* are pivoted about a bolt 9 positioned at the right of the carriage *i* as seen in Figure 3. The bolt 9 is mounted to slide in a pair of eyes 9'' attached to the upper and lower sides of the corresponding channel section *h'''* and a spring *v'* placed on the bolt 9 between the upper eye 9'' and a flange on the bolt, tends to move the bolt in a downward direction. The right-hand end of the clamping beam *u* is equipped with a boss *u'* keyed on the bolt and secured by a nut at the upper end of the bolt. The right-hand end of the backing beam *n* carries a U-shaped bracket *n''*, the flanges of which respectively engage the opposite upper and lower sides of the eyes 9'', and this bracket is splined on the bolt 9. The fork-shaped member 9' with an eye is secured on the lower end of the bolt. An arm 24 is secured to, or made integral with the boss *u'* of the clamping beam *u* and a spring 12 as shown in Figure 2 having its other end anchored on the carriage *i* tends to pull the arm in anti-clockwise direction. Since the clamping beam *u* is keyed on the bolt 9 and the backing beam *n* is splined therein, the two beams turn in unison when free to yield to the pull of the spring 12, and move together into the position shown in dot and dash lines in Figure 2 for the clamping beam *u*.

The free end of the clamping beam *u* in its active position enters an abutment 22 at the upper end of a bolt 15. This bolt extends through a hole in the horizontal flange of an L section abutment 23 secured to the left channel section *h'''* of the carriage at some distance below the channel abutment 22. A spring *v* on the bolt 15 is inserted between the channel abutment 23 and a flange 15' on the bolt 15. The bolt 15 is

locked by a locking lever *s* fulcrumed on the carriage at *r* and engaging a pin *t* in a forked member at the lower end of the bolt, a cam disk *q* attached to a shaft *q'* engaging the free end of the arm *s*. A similar lever and a similar cam disk, not shown, are provided for locking the bolt 9 at the other ends of the beams *u* and *n*, so that bolts 9 and 15 move in unison when the crank *p* of the shaft *q'* performs half a revolution.

When the beams *u* and *n* are in their active positions, as shown in Figures 2, 3 and 4, they are locked against rotation by a pawl 8 with a hook 26. The pawl is fulcrumed on the channel abutment 22 at 18 and its free end 29 is adapted to be engaged by an abutment 28 projecting downwardly from the counter-press table 27.

If thin veneers are to be joined which have a tendency to bend, such as the veneers *m* and *w*, Figure 4, a support between the two clamping and backing beam units is required to prevent deflection of the veneers at the joint. To this end, a support *o* of T-section is secured to the free ends of two curved arms 6' on a shaft 6 in the carriage *i*. In the position illustrated in Figure 4, the support *o* is in its active position between the two pairs of beams with its upper face at the level of the top plate *h'*. In this position it is locked by an arm 5 keyed on the shaft 6 outside the frame of the carriage *i*, and a pawl 3 fulcrumed on the carriage at 25. A spring 3' tends to pull the upper arm of the pawl 3 against the locking arm 5. At the lower end of the pawl 3, there is mounted a roller 2 for cooperation with a cam 4 on the horizontal flange of the corresponding rail *h*. An arm 7 with a roller 10 at its free end is keyed on the shaft 6 at the side of the locking arm 5 and cooperates with a cam 11 on the outer side of the vertical flange of the rail *h*.

The operation of the press is as follows:

At the beginning of the operation a veneer *m* (Fig. 4) is placed on the backing beam *n* so that its chamfered edge is situated at the middle of the support *o*. By a half rotation of the crank lever *p*, the cam disk *q* is rotated so that the lever *s*, pivotally mounted at 4, oscillates in a downward direction *t* and the clamping beam *u* is lowered by the spring *v* upon the veneer *m* which is thus clamped between the beams *u* and *n*. The mating veneer *w* is then pulled forward and laid by hand against the veneer *m*. The joint between the veneer strips is previously covered with glue or prepared for gluing by insertion of a glue film. The cam disk is then rotated by turning a crank in a manner analogous to the rotation of cam disk *q* so that, through the intermediary of the lever *y* and of the spring *z* the beam *n'* is lowered onto the veneer *w* so that this is clamped between the beams *l* and *n'*. The carriage *i* is then run into the open press, the roller 2 on the pawl 3 striking against the cam 4. The pawl 3 is thus slightly oscillated and the locking arm 5 disengaged so that the support *o* which is supported by the shaft 6 tilts downwardly together with the locking arm 5 and the arm 7, as shown in Figure 7. As soon as the joint has arrived between the heating plates *c* and *d*, the press is closed, the press table lifted with the bearing *e'* thereof striking against the sleeves *g* so that the track *h* with the structures *h''* and the blocks *H* with the carriage *i* are also lifted, until the veneers strike against the counterplate *d*. As the carriage *i* is elevated, the crank *p* is turned to release the bolts *o* and

15 through the means described so that the pair of beams *u* and *n* loosens its grip on the veneer *m*. Finally the pawl 8 is thrown out by the abutment 28, as shown in Figure 7, and the clamping beam *u* and its backing beam *n* are thrown into the dot and dash line position shown in Figure 2, by the spring 12. By this arrangement it is possible to glue veneers of any thickness without adjusting any parts of the machine.

10 When the glue has hardened sufficiently, the carriage with the veneers *m* and *w* are withdrawn. The pair of clamping and backing beams *u* and *n* have been moved out of the way and do not interfere with the introduction of a fresh veneer *m*. During the running back of the carriage, the roller 10 on the arm 7 strikes against the cam 11 whereby the support *o* is returned into its operative position. The support *o*, as mentioned, is necessary only for the joining of

20 thin veneers as these easily bend. For thick rigid veneers, the support *o* may be omitted and the construction of the carriage altered. The clamping scheme for this case is illustrated in Figure 6. The carriage is extended beyond the press so that the veneer *m* is clamped by beams *n* and *u* between the press. The veneer *w* is clamped by the beams *l* and *n'* in the manner described above. After the beams have been released, the carriage can be run back into position shown in

30 Figure 6 and the beams need not be swung out. The operating surfaces of the backing beams *u* and *n* and *l* and *n'* may be inclined towards the support *o* as shown in Figure 5. An increased pressure is thus exerted upon the edges of the veneers to be joined so that even undulated veneers lie flatly on the support.

I claim:—

1. A press for joining the cross-grain edges of strips of veneer or the like comprising in combination a movable carriage, two pairs of relatively adjustable clamping and backing beams arranged on said carriage and each pair arranged to grip at a distance from the joint one of the two strips of said veneer after their cross-grain edges have been chamfered and prepared for sticking together, hot pressing means arranged to receive said carriage with the two veneers clamped thereon and to exert pressure and heat to said veneers and their joint, a support oscillatably mounted on said carriage between said pairs of clamping and backing beams, a locking arm operatively connected to said support, means operatively connected to the arm for holding the support in its active position, and means adapted to release said locking arm during the running of said carriage into said press.

2. A press for joining the cross-grain edges of strips of veneer or the like comprising in combination a movable carriage, two pairs of relatively adjustable clamping and backing beams arranged on said carriage and each pair arranged to grip at a distance from the joint one of the two strips of said veneer after their cross-grain edges have been chamfered and prepared for sticking together, hot pressing means arranged to receive said carriage with the two veneers clamped thereon and to exert pressure and heat to said veneers and their joint, a support oscillatably mounted on the carriage between said pairs of clamping beams, an arm pivotally mounted on said carriage and connected to said support, a roller on the free end of said arm, a frame mounted on said press and comprising rails adapted to guide said carriage into and out of said press, a cam fixed

on said frame in the path of said roller and adapted to swing said arm upwardly when the carriage is run out of said press and consequently raise said support, and locking means adapted to maintain said support in its active position.

3. A press for joining the cross-grain edges of strips of veneer or the like comprising in combination a movable carriage, two pairs of relatively adjustable clamping and backing beams arranged on said carriage and each pair arranged to grip at a distance from the joint one of the two strips of said veneer after their cross-grain edges have been chamfered and prepared for sticking together, hot pressing means arranged to receive said carriage with the two veneers clamped thereon and to exert pressure and heat to said veneers and their joint, uprights on the press and a frame vertically adjustable on said uprights and comprising rails adapted to guide said carriage into and out of said press.

4. A press for joining the cross-grain edges of strips of veneer or the like comprising in combination a movable carriage, two pairs of relatively adjustable clamping and backing beams arranged on said carriage and each pair arranged to grip at a distance from the joint one of the two strips of said veneer after their cross-grain edges have been chamfered and prepared for sticking together, hot pressing means arranged to receive said carriage with the two veneers clamped thereon and to exert pressure and heat to said veneers and their joint, the clamping and backing beams having working surfaces downwardly inclined towards the joint of the veneers and a support for the engaged edges of the veneer strips between the clamping and backing beams.

5. A press for joining the cross-grain edges of strips of veneer or the like comprising in combination a movable carriage, two pairs of relatively adjustable clamping and backing beams arranged on said carriage and each pair arranged to grip at a distance from the joint one of the two strips of said veneer after their cross-grain edges have been chamfered and prepared for sticking together, hot pressing means arranged to receive said carriage with the two veneers clamped thereon and to exert pressure and heat to said veneers and their joint, an abutment for the clamping beam and an abutment for the backing beam of one of said pairs of beams and a common bolt carrying both beams of each pair, a pawl adapted to lock said beams in clamping position, means for disengaging said pawl, an arm on said bolt and a spring connected to said arm and adapted to automatically turn said beam to an angle of 90° after the disengagement of said pawl.

6. A press for joining the cross-grain edges of strips of veneer or the like comprising in combination a movable carriage, two pairs of relatively adjustable clamping and backing beams arranged on said carriage and each pair arranged to grip at a distance from the joint one of the two strips of said veneer after their cross-grain edges have been chamfered and prepared for sticking together, hot pressing means arranged to receive said carriage with the two veneers clamped thereon and to exert pressure and heat to said veneers and their joint, press plates in said press, undulated springs covering the operating surfaces of said plates and guide pins adapted to guide said springs on said plates with a limited amount of play.

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