May 16, 1944. A. FRIZ 2,348,803

VENEERING PRESS

Filed Dec. 13, 1940 3 Sheets-Sheet 1

Fig. 2

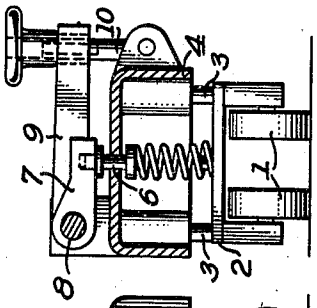


Fig. 4

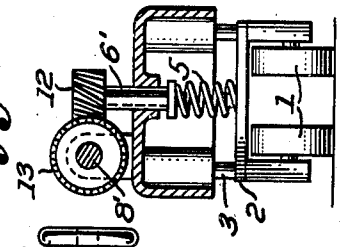


Fig. 1

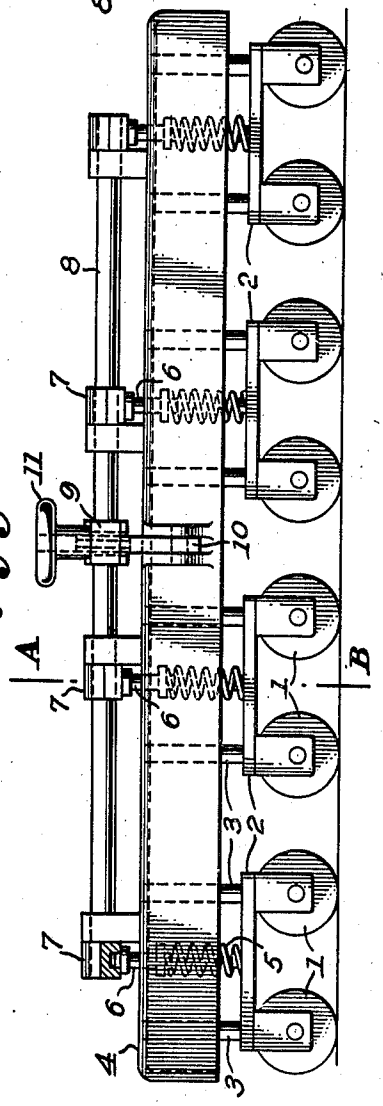
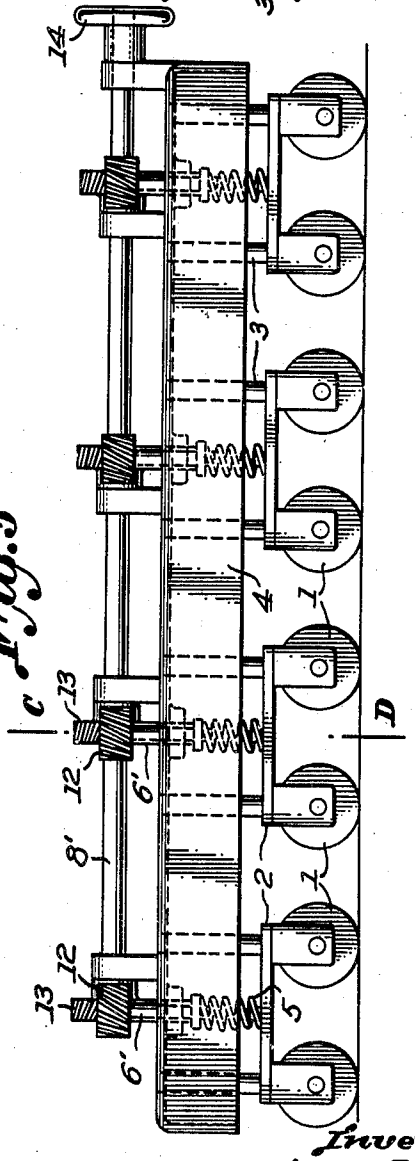


Fig. 3



Inventor:
ADOLF FRIZ

By Attorney.

May 16, 1944. A. FRIZ 2,348,803

VENEERING PRESS

Filed Dec. 13, 1940 3 Sheets-Sheet 2

Fig. 6

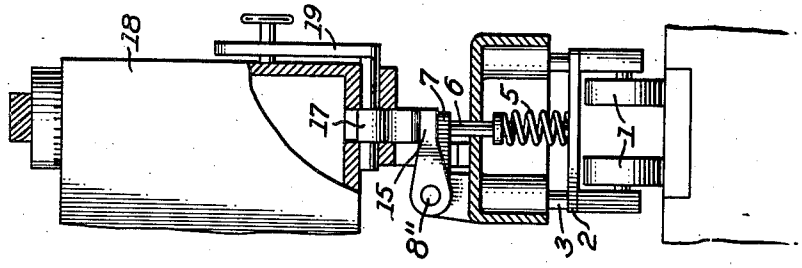
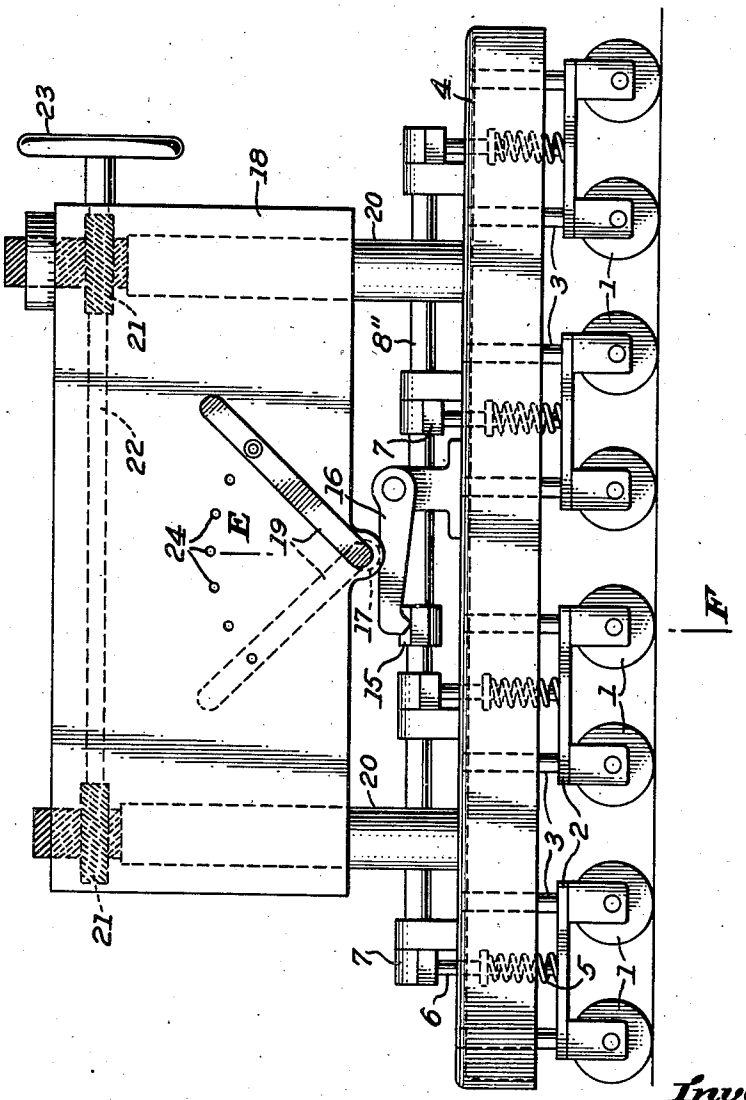


Fig. 5



Inventor:
ADOLF FRIZ
By Albert Colman
Attorney.

May 16, 1944. A. FRIZ 2,348,803

VENEERING PRESS

Filed Dec. 13, 1940 3 Sheets-Sheet 3

Fig. 8

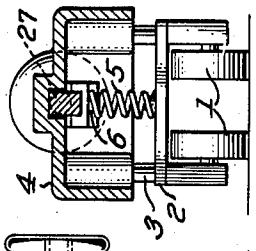


Fig. 10

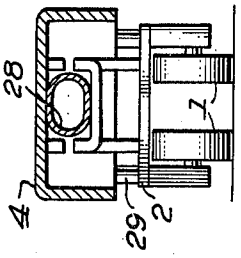


Fig. 7

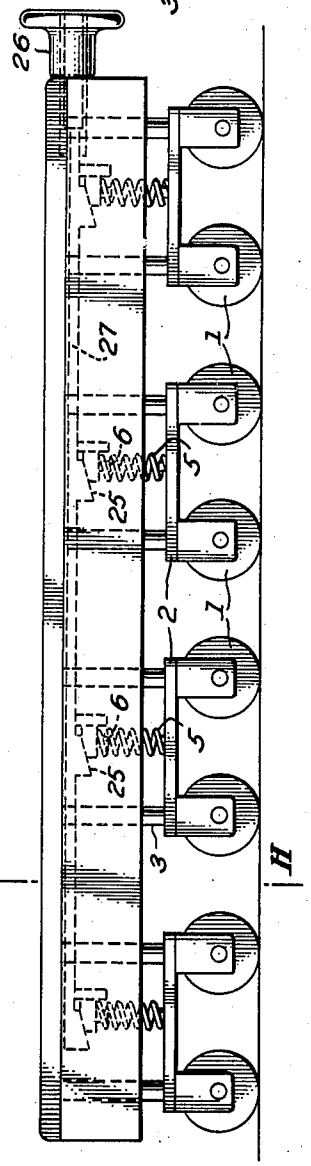


Fig. 9

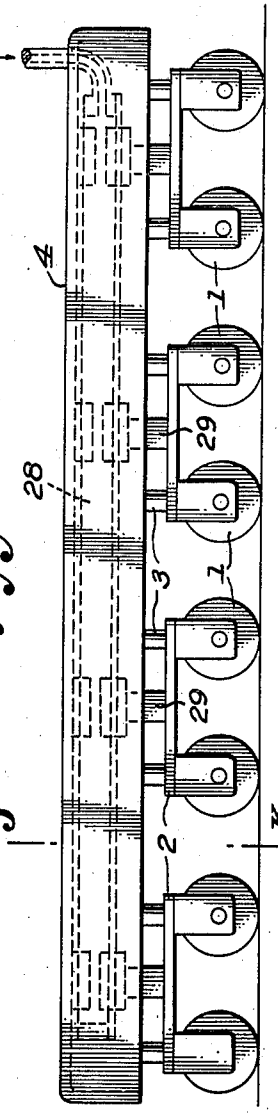
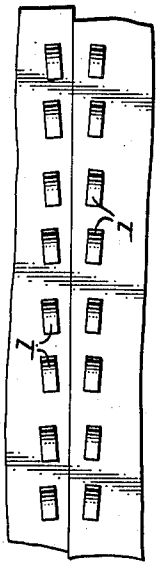


Fig. 11



Inventor.
ADOLF FRIZ

By Allfolcombe
Attorney.

Patented May 16, 1944 2,348,803

UNITED STATES PATENT OFFICE

2,348,803

VENEERING PRESS

Adolf Friz, Stuttgart-Bad Cannstatt, Germany; vested in the Alien Property Custodian

Application December 13, 1940, Serial No. 370,060
In Germany August 7, 1939

4 Claims. (Cl. 144—279)

This invention relates to veneering machines or presses, and is particularly concerned with a new and improved arrangement and operation of yieldably mounted elements such as rollers exerting elastic downward pressure upon pieces of the veneer moving underneath the rollers on suitable conveyor means, for example, a conveyor belt or chain or the like.

The edges or margins of the pieces of veneer which are to be joined or mounted in such a press are provided with suitable binder means, for example, glue, and the rollers are arranged in pairs or sets of pairs near the joining edges, converging at an angle in the direction of the movement of the veneers. The rollers thus exert upon the pieces of veneer an elastic downward pressure and at the same time draw them laterally together so as to form as it were the seam, by forcing the glue or binder carrying edges into intimate engagement. Suitable chain, belt or band means may be substituted for these rollers or sets of rollers.

Previously known structures of this general type provided for the individual pressure adjustment of the rollers by spring means or the like, and for vertical adjustment or setting of all the rollers so as to take care of variations in the thickness of the veneer to be mounted, and also for the desired pressure in accordance with the thickness and type as well as kind of material, for example, wood, that may be used for the base. The various adjustments that are to be made in such machines introduced the danger of unequal or unsuitable setting, which is particularly true when it is considered that the operation is frequently left in the hands of unskilled labor. Thin veneers are very sensitive to unequal or uneven pressure, and particularly to excess pressure applied by all or some of the rollers; the edges may warp under such conditions and a clean and unobjectionable joining or mounting is prevented.

The invention overcomes these disadvantages by the provision of means for depth adjustment of all the rollers, and in addition thereto means for adjusting the individual rollers in common in such a manner that the pressure is evenly and uniformly applied to the veneer.

The invention will be better understood from the detailed description rendered below with reference to the accompanying drawings, wherein

Fig. 1 is a schematic representation of a partial side view of a veneer press, omitting all known or unessential details, comprising a carrier frame which is adjustable as to depth and carrying pairs or sets of rollers made and operated in accordance with the invention;

Fig. 2 is a sectional view along lines A—B in Fig. 1;

Figs. 3 and 4 illustrate another embodiment of the invention analogous to the showing of Figs. 1 and 2;

Fig. 5 illustrates a schematic side view of another embodiment of the invention, including the depth adjustment of the roller carrying frame;

Fig. 6 is a section of the embodiment shown in Fig. 5 taken along the lines E—F;

Figs. 7 and 8 show still another embodiment of the invention in schematic side view and in section, respectively;

Figs. 9 and 10 represent a further embodiment of the invention analogous to the showing of previously mentioned figures; and

Fig. 11 shows, on a smaller scale, a schematic plan view of the rollers and their position with respect to the pieces of veneer to be joined or mounted.

Referring now to Figs. 1 and 2, the rollers 1 are provided in sets, each comprising two pairs of oppositely disposed rollers mounted on carriers 2 which are held vertically adjustable by means of studs 3 in the common carrier frame 4. The pressure of an element 5, which may be a spring, acts substantially upon the middle of each carrier 2 holding the four rollers 1. These springs produce the load pressure for the rollers.

In these figures, as well as in other figures, the rollers are shown, for the sake of simplicity of representation, as if they were disposed parallel to the conveyor means. The rollers of each pair are in reality disposed at an angle converging forwardly in the direction of the movement of the veneers and of its conveyor means, as indicated in Fig. 11.

The common carrier frame 4 is mounted vertically adjustable so that the rollers can be adjusted with respect to the thickness of the veneer, and can be lifted from the work in common as a unit.

Each of the springs 5 (there being one such spring for each of the sets of rollers) is acted upon by a pressure stud 6, and each such stud is arranged for cooperation with a lever arm 7. These lever arms are mounted in common on a shaft 8 which is provided in bearings on the carrier frame 4. The shaft 8 also carries a larger operating lever 9. This operating lever is adjustable by an arrangement including the mem-

ber 11, which may be made in the form of an internally threaded knob, in threaded engagement with the bolt 10. Tightening or loosening of the knob 11 on the bolt 10 will rotate or angularly displace the lever 9, thereby rotating the shaft 8 and with it all of the levers 7, and will therefore change one way or the other the pressure of all the springs 5, transmitting to the corresponding roller carriers 2 the desired pressure. It will be apparent that the arrangement permits a simultaneous and common adjustment of all the rollers. The adjustment is simple and produces uniform results with respect to the pressure to be exerted on the veneer.

In accordance with the embodiment Figs. 3 and 4, the pressure bolts 6' for the springs 5 are threaded, each carrying an internally threaded cog wheel 12. Rotation of any of these wheels, assuming of course that the wheel itself cannot move vertically, will lift or drop the corresponding screw bolt 6' a corresponding amount so as to alter the pressure of its spring 5. Screw wheels 13, each coacting with a corresponding cog wheel 12 and operating in the manner of a worm gear, are for this purpose arranged on the shaft 8'. These gears may be actuated by rotating the shaft 8' by means of a knob 14, thereby obtaining a uniform and simultaneous adjustment of all the pressure springs 5 in an obvious manner.

It is also possible to rest the springs 5 against a fixed machine part in such a manner that the pressure or tension of each spring is increased upon lifting the rollers 1 and decreased upon dropping the rollers down into engagement with the pieces of veneer. However, such an arrangement has not proved very practical; it does not produce the proper pressure which should always be adjusted in accordance with the thickness of the veneer.

The embodiment made in accordance with Figs. 5 and 6 shows a structure wherein the tension of all pressure springs is automatically altered upon lifting or dropping the rollers with respect to the veneer carrying table or conveyor. However, the increase or decrease of the tension of the spring is not proportional to the distance by which the rollers are lifted or dropped, respectively.

The shaft 8'', shown in Figs. 5 and 6, carrying the pressure transmitting levers 7, which coact with the pressure bolts 6 for the springs 5, is provided with a lever 15. This lever may be actuated by a lever 16 which is journalled on a suitable bracket mounted on the carrier frame 4 and extends at an angle thereto and parallel to the conveyor motion of the veneers. An eccentric 17 acting in the manner of a cam, is mounted in a bearing on a fixed part 18 of the machine, a lever 19 being provided for actuating the cam or eccentric. Now when the entire frame or main carrier 4 with its rollers is lifted or dropped with respect to the work by means of spindles 20, such movement will affect the eccentric 17 and the lever system 16, 15, 7, and the tension or pressure of all the springs 5 will be altered. This alteration, however, will not exactly correspond to the distance by which the carrier frame 4 is lifted or dropped. The amount of change in the tension of the springs as a function of the amount of vertical adjustment of the carrier frame 4 can be obtained by suitable selection and dimensioning of the levers as well as by the point of contact between the cam 17 and lever 16, and also the curvature of the cam or eccentric 17.

The spindles 20 are threaded in their upper portions carrying in threaded engagement worm gears 21. These gears in turn are operable by worms mounted on the shaft 22 which is rotatable by means of the hand wheel 23. The cam or eccentric 17 is adjustable by means of the lever 19, thereby altering or adjusting the tension of all the springs 5 in common. The lever 19 may be provided with a suitable stop pin adapted for engagement with apertures or indentations 24 which are arranged in a segment of the housing 18.

A slightly different arrangement is shown in the embodiment according to Figs. 7 and 8. A shaft or rod 27 is disposed parallel to the direction of motion of the veneer, and may be longitudinally shifted by means of the hand wheel 26 which is in threaded engagement therewith. This shaft or rod carries a number of wedge members or projections, indicated at 25, one for each set of rollers, and each wedge cooperates with a corresponding wedge member carried on the pin or stud 6 which is in engagement with the corresponding spring 5. Rotation of the hand wheel 26 so as to shift the rod or shaft 27 to the left will cause a lessening of the tension of the springs 5; and vice versa, when the hand wheel is rotated so as to shift the rod or shaft 27 to the right, the wedge members or surfaces 25 move the corresponding wedge members 6 downwardly and thereby increase the pressure of the springs.

The embodiment, Figs. 9 and 10, uses a particularly simple means for putting the rollers 1 under the requisite elastic pressure. This means comprises a hydraulically or pneumatically operable hose member or the like indicated at 28. This hose member extends within the carrier frame 4 and acts upon suitable bracket members, each carried on a bolt or pin 29 which in turn is mounted on the corresponding carriage 2 holding the rollers.

As has been said before, the rollers are arranged in sets of four, forming two pairs, on carriages designated at 2 on the drawings. The rollers of each pair are oppositely disposed, each roller engaging one piece of veneer near its edge. These rollers are placed at an angle converging in the direction of the motion of the work, that is, the veneers, as particularly shown in Fig. 11. The veneers, as initially stated, may be moved under the rollers of the press on suitable conveyor means.

Changes may be made within the scope and spirit of the appended claims.

I claim as my invention:

1. A veneer press of the class described, comprising a plurality of sets of rollers which are brought in contact with veneer conveyed thereunder, a plurality of carriers, each set of rollers being mounted on a separate carrier, a frame on which each carrier is mounted for movement upwardly towards said frame and for movement downwardly away from the frame, separate resilient means in contact with each carrier whereby to exert pressure on each carrier to move it away from said frame downwardly towards the conveyed veneer, and means common to all sets of rollers for simultaneously adjusting the downward pressure exerted by each resilient means whereby to adjust the position of said sets of rollers relative to said frame, said adjusting means comprising a member movably mounted

on said frame, means associated with said movable member for contacting said resilient means, the means associated with the movable member being movable therewith and in contact with each resilient means for simultaneously adjusting the pressure developed by all of said resilient means in accordance with the movement of said movable member, and drive means associated with said frame for moving said movable member.

2. A veneer press as set forth in claim 1 wherein said movable member is rotatably mounted and the means associated with the movable member for contacting said resilient means comprise a plurality of arms, each arm being fixed to said movable member.

3. A veneer press as set forth in claim 1 wherein said movable member is axially shiftable in a direction lengthwise of said frame and the means associated with the movable member for contacting said resilient means comprise a plurality of wedge shaped elements, each wedge shaped element being fixed to the movable member.

4. A veneer press of the class described, comprising a fixed part, a frame supported by said fixed part for vertical movement towards and away from said fixed part, actuating means for raising and lowering said frame, a plurality of sets of rollers which are brought in contact with veneer conveyed thereunder, a plurality of carriers, each set of rollers being mounted on a separate carrier, each carrier being mounted on said frame below the face of the frame which is most distant from said fixed part of the press, said carriers being mounted for movement upwardly towards said frame and for movement downwardly away from the frame, separate resilient means in contact with each carrier whereby to exert pressure on each carrier to move it away from said frame downwardly towards the conveyed veneer, a shaft rotatably mounted on said carrier frame, a plurality of lever arms fixed on said shaft, each of said arms being in contact with a resilient means associated with a carrier and adjusting the downward pressure developed by such resilient means in accordance with the rotation of said shaft, an operating lever fixed on said shaft to rotate said shaft, and means for actuating said operating lever, said last named means comprising a drive lever carried by said frame in contact with said operating lever and eccentric means carried by the fixed part of the press in contact with the drive lever for controlling the position of the drive lever in accordance with the position of said frame relative to the fixed part of the press.

ADOLF FRIZ.