O. P. BUSHNELL.

HOT PLATE PRESS FOR WOOD VENEERS.

APPLICATION FILED JAN. 7, 1914.

1,121,470.

Patented Dec. 15, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

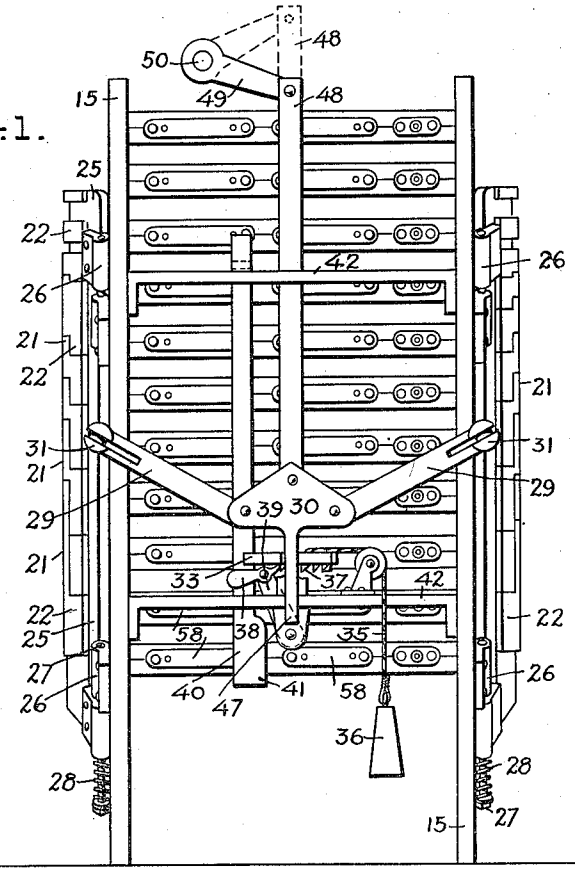


Fig. 6.

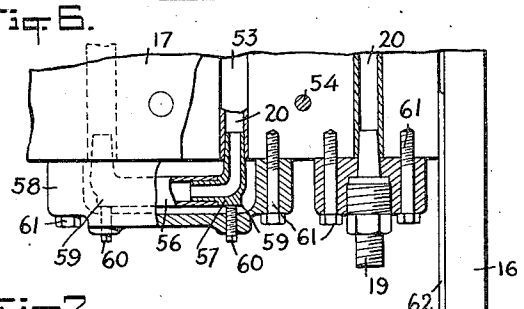
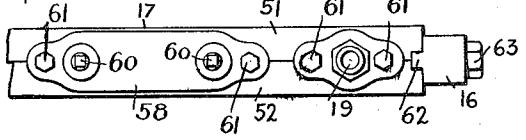


Fig. 7.



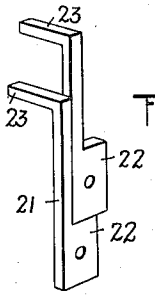


Fig. 8.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 3.

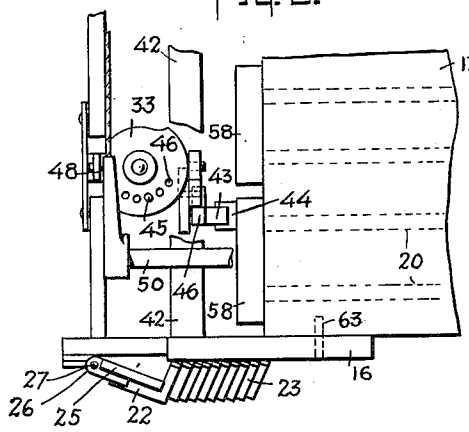


Fig. 5.

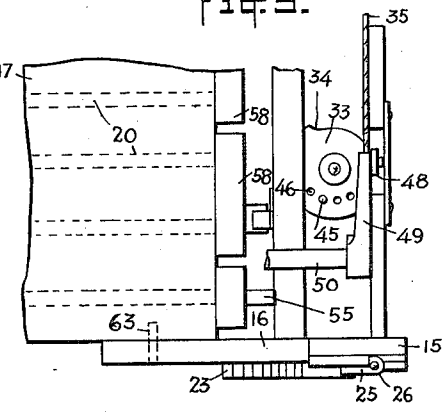


Fig. 2.

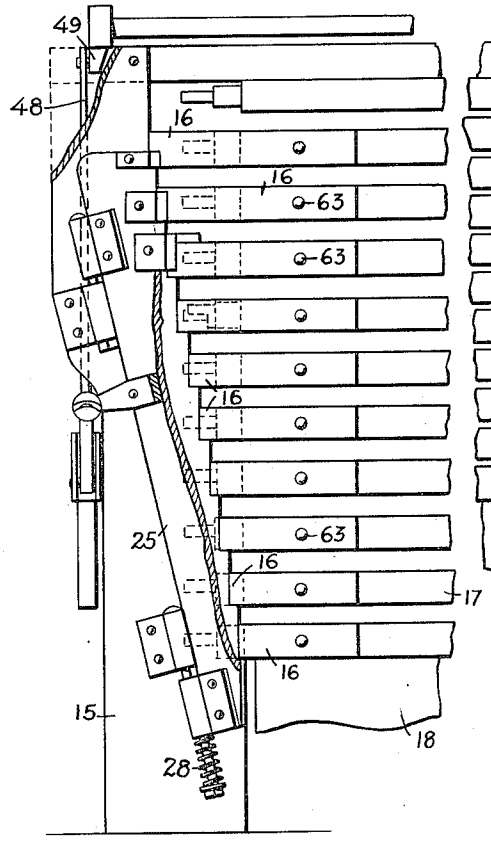
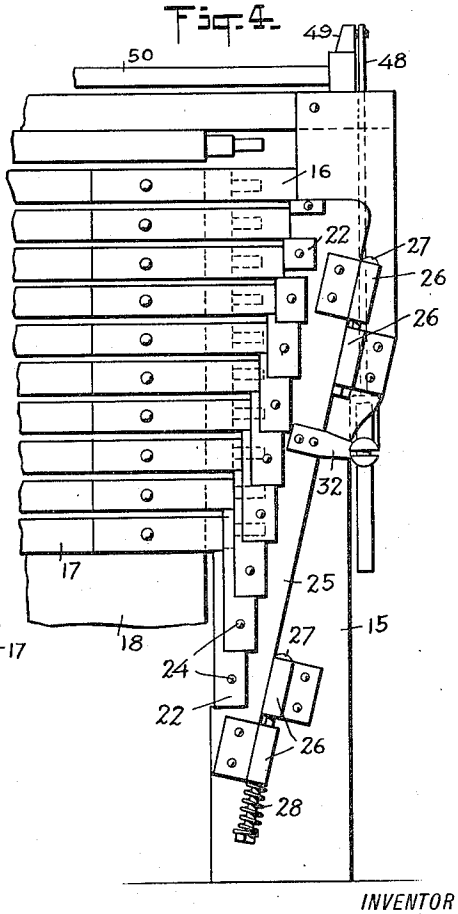


Fig. 4.



WITNESSES

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HOT-PLATE PRESS FOR WOOD VENEERS.

1,121,470. Specification of Letters Patent. Patented Dec. 15, 1914.

Application filed January 7, 1914. Serial No. 810,792.

To all whom it may concern:

Be it known that I, OSCAR P. BUSHNELL, a citizen of the United States, and a resident of Belleville, in the county of Essex and State of New Jersey, have invented a new and Improved Hot-Plate Press for Wood Veneers, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide a press of the character mentioned, adapted to uniformly limit the spread of the plates for the escapement of steam; to provide means for regulating the number of times when the plates are spread for the escapement of steam; to provide means for automatically opening the plates for delivery of the veneer from therebetween; to provide heating plates having protected steam channels formed therein; and to simplify and economize the construction of said plates.

One embodiment of the present invention is shown in the accompanying drawings, in which—

Figure 1 is an end elevation of a press constructed and arranged in accordance with the present invention; Fig. 2 is a side elevation of a fragment of a press, the auxiliary rack plate being partly cut away to shown the main rack and the hot plates as separated and as supported thereby; Fig. 3 is a top plan view of the same the auxiliary rack plate, being shown complete; Fig. 4 is a view similar to Fig. 2, differing from Fig. 3 in that the hot plates are shown as supported by the auxiliary rack plates; Fig. 5 is a top plan view of a corner fragment of the press, the auxiliary racks being in position; Fig. 6 is a detail view, on an enlarged scale, showing a fragment of one of the hot plates for the press and the method employed by me for preventing the leakage of steam in said plates, the upper half of the plate being cut away to show in section the pipes laid within the channels of the lower half section; Fig. 7 is an end elevation of the fragment shown in Fig. 6; Fig. 8 is a detail view in perspective showing two of the auxiliary rack-supporting struts.

As seen in the accompanying drawings, the press frame is provided with corner standards having each a corner plate 15. The corner plates 15 are structurally united with the frame of the press, and are provided at regular intervals with offsets or steps to extend beneath arms 16 with which the various plates 17 are provided. The offsets and steps formed in the plates 15 are regularly spaced so that when the platen 18 of the press is lowered, each of said plates rests in its respective offset or pocket. On each of the plates 17, several sheets or boards of veneer are usually disposed. Steam, having been previously admitted to the plates 17 by means of an inlet nipple 19, flows through the various pipes 20 to heat and maintain the temperature of said plates. The sap in said veneers is driven out by the heat in said plates and by the pressure, generally in the form of steam, which, if not permitted to escape, might dangerously expand, or at least condense to form moisture which would settle on the veneer and impair the finish thereof. It is to avoid the accumulation of the steam thus produced that I open said plate, as shown in Fig. 4 of the drawings.

The movement of the platen 18 is necessarily slow; therefore, it is thought best to limit the extent of the movement of the platen and ram supporting the same. With this end in view, and to secure uniform separation of the plates 17, I provide struts 21. The struts 21 have each a bolting flange 22, a vertical extension therefrom, and an angular extension or bench 23. The struts 21 are rigidly secured by means of rivets 24 to auxiliary plates 25, said plates being pivotally connected to the corner plates 15 by means of hinge knuckles 26 and hinge pins 27. Mounted on the lowermost pins 27 are springs 28, the operation whereof is to normally close the plates 25 to the position shown in Fig. 4 of the drawings. The action of the springs 28 is counteracted by the pull of link arms 29, which arms are pivotally connected by a heart-shaped plate 30. The width of the plate 3 is sufficient to spread the arms 29, which, operating through knuckle joints 31 and long arms 32, close the plates 25 in position shown best in Figs. 4 and 5 of the drawings, where the extension or benches 23 are placed under the ends of the arms 16. To operate as guides for the various plates 17, the struts 21, while forming a bench for one plate, engage in guiding relation the next and succeeding and lower plate, the vertical arm of each of said struts resting at the outside of said plates.

The heart-shaped plates 30 are each sup-

ported in operative position by a mutilated disk 33, the periphery whereof is cut away to form an inset portion 34. The inset portions 34 are each in the path of a strut 47, the foot whereof rests upon, to slide on the surface of, the mutilated disk 33. The disk 33 is rotated by a rope 35 and a weight 36 attached thereto. The weights 36 are suitably anchored to each of the disks 33. To normally hold the disks 33 from being rotated by the weights 36, each disk is provided with a series of ratchet teeth 37, which are engaged by a pawl 38, to hold the plate against rotation. The disks 33 are rotated in the opposite direction from the pull of the ropes 35 by the operation of the pawl 38 and the swinging levers 39 whereon said pawls are mounted. The levers 39 are pivotally mounted on a pin 64 on a standard 65, which is mounted on the brace rod 42. The levers 39 are operated by thrust rods 40, the extended sides 41 whereof are in the path of the levers 39 and move the same forward the space of one of the teeth 37 whenever said rods 40 are lifted. The rods 40 are each guided in cross brace rods 42, which extend between the corner plates 15. The rods 40 have each a projecting member 43 to extend over a bracket 44, offset from one of the hot plates 17 (see Fig. 3 of the drawings). The initial position of the disks 33 is determined by a pin 45, which is at will inserted in any of the perforations 46 formed in said disks and disposed in the path of each of the struts 47, to impinge thereon when said struts are raised, being moved thereto by the weights 36 and ropes 35 connected with said disks. From this initial position, the disks 33 are gradually moved by the operation of the pawl 38, until struts 47 drop into the inset portions 34. The said struts then drop to the position shown in Fig. 1 of the drawings. The arms 32 are drawn around, and the plates 25 are moved to open position, where the benches 23 are withdrawn from the path of the arms 16. The hot plates 17 are now permitted to rest upon the benches on the edge of each of the plates 15. In this position, the plates 17 are sufficiently separated to remove the sheets of veneer from therebetween. When the press is reloaded with veneers, the heart-shaped plates 30 are manually lifted until the struts 47 pass above the disks 33. The pin 45 of each disk having been previously set to limit the rotation thereof. The weights 36 now rotate each of said disks under one of said struts, until the pins 45 engage the struts 47. In this position of the struts 47 and parts connected therewith, the plates 25 and the arms 32 have been swung so that the benches 23 are in position to support the hot plates 17 when the platen 18 descends after pressing said plates and the sheets of veneer therebetween. To secure uniformity of action of the disks 33, the struts 47, the plate 30 and parts connected therewith, said plates 30 are operatively connected by rods 48, arms 49 and a connecting shaft 50.

As above stated, during the heating of the veneers, when employing a press constructed and arranged in accordance with the present invention, the stroke of the hydraulic ram and platen connected therewith is shortened. To save the time and expense incident to the movement of the ram and platen for the greatest length of stroke, comparison of the strokes can be made by noting the distance from the upper to the lower plates 17 in Fig. 4, where said plates are resting on the benches 23, and the distance between the upper and lower plates 17 in Fig. 2, where the plates 17 are resting on the benches formed in the edges of the plates 15. As the purpose in spreading the plates 17 is that above-mentioned, to allow the steam to escape from between said plates and from the veneer thereon, the time of separation is limited only to the action of the ram which is immediately returned on its upstroke. On each stroke of the ram and platen connected therewith, the plates 17 are lifted toward the head of the press and the thrust rods 40 are likewise lifted. With each lift of said thrust rods, the extended sides 41 thereof operate upon the levers 39, to swing the same and the pawl 38 carried thereby to engage the teeth 37 of the disks 33, to rotate the same the distance of one of said teeth. This is repeated until the struts 47 override the said disks and drop within the insets 34 thereof, when, the benches 23 being withdrawn from supporting relation to the plates 17, the ram and platen carried thereby are retracted to their lowest position where and when the press is unloaded and reloaded.

The plates 17 herein shown are preferably constructed from two metal slabs 51 and 52. Said slabs 51 and 52 are dressed to form a close joint when overlaid, and which has cut therein a series of parallel semi-circular grooves 53, which register when said slabs are so overlaid, to form tubular channels extending through the plate 17, from end to end thereof. Lengthwise in these grooves are disposed copper pipes 20. The slabs 51 and 52 are united by means of bolts 54, or by other suitable or equivalent means. The ends of the pipes 20 are united to form a continuous serpentine pipe extending through each of said plates 17, having at one end thereof the inlet nipple 19 and at the opposite end a corresponding outlet nipple 55. The connection between the ends of the pipes 20 is formed by telescoped loop pipes 56 and 57. Both of said pipes 56 and 57 are mounted in the hollow of a cap 58, said hollow extending over and encompassing the open-

ings of the adjacent pipes 20. Each of the loop pipes 56 and 57 has an angular or L-extension, said extension being tapered to enter the end or bore of the pipe 20, as seen best in Fig. 6 of the drawings. Each of the pipes 56 and 57 is provided with a rest 59 to receive the ends of a set screw 60. The caps 58 have each a bolting flange, through a hole in which is passed a bolt 61, the threaded ends whereof enter and engage tapped holes in the plates 17 formed between the slabs 51 and 52. When the cap 58 is placed in position, the bolts 61 registering with the tapped holes provided therefor, the tapered ends of the pipes 56 and 57 enter the corresponding pipes 20. After the bolts 61 have been set up, the screws 60 are manipulated to more firmly drive the tapered ends of the pipes 56 and 57 within the ends of the pipes 20, thereby sealing the joint between the pipes 20, 56 and 57, to form a perfect loop and continuous passage from pipe 20 to pipe 20.

Each of the arms 16 is provided with a centering flange 62. The flange 62 rests within a channel formed in the side of the plates 17, to steady said arms and permit the same to be held in service relation by a single bolt 63 (see Fig. 7 of the drawings).

As will be noted in Fig. 8 of the drawings, the bolting flanges 22 of the struts 21 are shaped to nest or rest one upon the other, thereby transmitting and distributing the supporting strain imposed upon said struts by the various plates 17.

While I have herein described the plates as having grooves formed therein, and corresponding filling tubes of relatively thin and yielding material, the ends whereof are connected by loop sections, it will be understood that I may cut the grooves in the slabs 51 and 52, the grooves being connected within the margins of the slabs, to receive a continuous pipe, the ends whereof are bent, and I desire to be understood as claiming such a construction.

Claims:

1. A press as characterized, having a plurality of superposed, movable heated plates; a plurality of fixed supporting members for said plates to normally hold said plates in spaced-apart relation to permit the introduction and removal of veneer boards therefrom; and a plurality of movable supporting members to hold said plates in spaced-apart but closer relation than said fixed supporting members, to permit the escape of steam from between said plates.

2. A press as characterized, having a plurality of superposed, movable heated plates; a plurality of fixed, supporting members for said plates to normally hold said plates in spaced-apart relation, to permit the introduction and removal of veneer boards therefrom; a plurality of movable supporting members to hold said plates in spaced-apart but closer relation than said fixed supporting members, to permit the escape of steam from between said plates; and an automatic means for moving said movable members out of the path of said plates at predetermined intervals of operation.

3. A press as characterized, having a plurality of superposed, movable heated plates; a plurality of fixed, supporting members for said plates to normally hold said plates in spaced-apart relation, to permit the introduction and removal of veneer boards therefrom; a plurality of movable supporting members to hold said plates in spaced-apart but closer relation than said fixed supporting members, to permit the escape of steam from between said plates; a mechanism for removing said movable members from engagement with said plates, embodying a rotary disk having a mutilated portion, and a rod adapted to rest on said disk in the path of said mutilated portion, said rod being operatively connected with said movable supporting members; and yielding means for rotating said disk beneath said rod.

4. A press as characterized, having a plurality of superposed, movable heated plates; a plurality of fixed, supporting members for said plates to normally hold said plates in spaced-apart relation, to permit the introduction and removal of veneer boards therefrom; a plurality of movable supporting members to hold said plates in spaced-apart but closer relation than said fixed supporting members, to permit the escape of steam from between said plates; a mechanism for removing said movable members from engagement with said plates, embodying a rotary disk having a mutilated portion, and a rod adapted to rest on said disk in the path of said mutilated portion, said rod being operatively connected with said movable supporting members; yielding means for rotating said disk beneath said rod; and means adjustable on said disk for limiting the rotation thereof by said yielding means.

5. A press as characterized, having a plurality of superposed, movable heated plates; a plurality of fixed, supporting members for said plates to normally hold said plates in spaced-apart relation, to permit the introduction and removal of veneer boards therefrom; a plurality of movable supporting members to hold said plates in spaced-apart but closer relation than said fixed supporting members, to permit the escape of steam from between said plates; a mechanism for removing said movable members from engagement with said plates, embodying a rotary disk having a mutilated portion, and a rod adapted to rest on said disk in the path of said mutilated portion, said

rod being operatively connected with said movable supporting members; yielding means for rotating said disk beneath said rod; and a pin insertible in perforations provided in said disk in the path of said rod to determine the movement of said disk.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OSCAR P. BUSHNELL.

Witnesses:
P. L. DIEHL,
C. THOS. JENKINS.