May 8, 1934. T. S. HAYNES 1,957,709

WOODWORKING CLAMP

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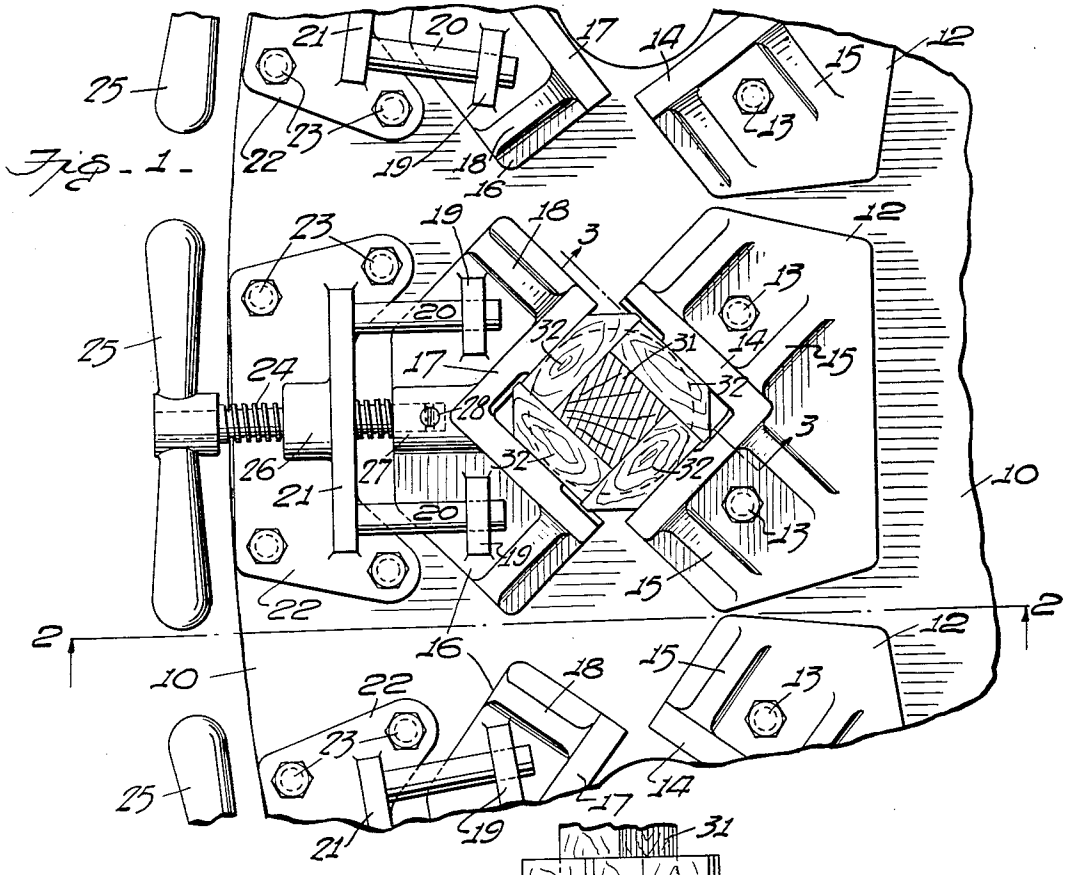


Fig. 1.



Fig. 2.

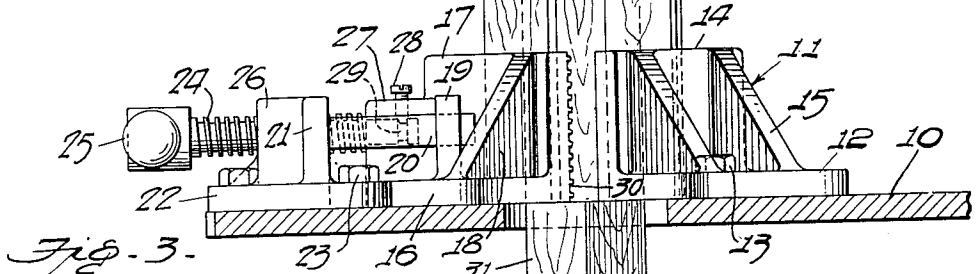
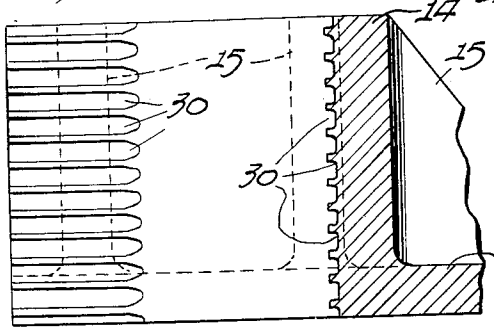


Fig. 3.



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WOODWORKING CLAMP

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13 Claims. (Cl. 144—292)

The invention relates to wood working machines for use in furniture factories and other places and has special reference to gluing clamps.

In the furniture and allied wood working industries it is the established practice to glue four blocks on the four sides of square posts or legs before they are turned in a lathe. This enables the furniture manufacturer to obtain turnings of pleasing and massive design with the minimum amount of material. For instance by means of such glued on blocks a piece two inches square in cross section can be built up so that a finished post, leg or the like turned therefrom can be produced in a size as large as three and one-half inches in diameter at a cost but little more than that of making a turning of the much smaller size from the original single piece. This statement relates to the material and means that the cost of the material added to the original piece is slight. However, the labor cost of applying the four blocks to the sides of the original or base piece is quite high and has been prohibitive in the manufacture of cheap furniture. The present practice is to glue two narrow blocks on two opposite sides of the original piece and after the glue has dried, to plane the piece so that two more blocks can be applied to the other two opposite sides, this method involving three operations and much delay in manufacture.

It is with the above facts and the deficiencies of the present system in view, that I have devised the present invention which has for its general object the provision of a novel clamp by means of which blocks may be glued and clamped on all four sides of an original piece or base in one operation, thereby effecting a great saving in time and labor.

An important object of the invention is to provide a clamping device of such form that a series of them may be readily mounted upon and carried by a rotary platform, table or the like so that a large number of pieces may be built up or assembled in a continuous operation, the idea being that there be a sufficient number of units that the operation of filling them all will require a length of time corresponding to that required for the setting of the glue so that as the successive built up pieces come around again to the operator they may be removed from the successive clamps and the clamps refilled.

Another important but more specific object of the invention is to provide a wood working clamp for this purpose embodying jaws of particular and peculiar configuration so formed as to engage and hold all four of the applied or extra blocks at the same time, thereby rendering two jaws sufficient in contradistinction to mechanisms wherein four jaws may be provided for holding the respective applied blocks.

Another object is to provide a wood working clamp embodying a very simple screw mechanism for moving one jaw relative to the other and thereby bringing about the clamping action.

A still further object is to provide a clamp having jaws of novel form as regards portions of their active faces so as to prevent any slipping of the applied blocks with respect to one another and with respect to the core or base to which they are applied.

An additional object is to provide an apparatus of this character which will be very simple and inexpensive to make, easy to use, and which in addition to its labor saving characteristics will be efficient and durable in service, and a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawing in which:

Figure 1 is a fragmentary plan view of a rotary table carrying my novel clamping means, one unit being shown complete and adjacent units being represented as broken away,

Figure 2 is a cross section on the line 2—2 of Figure 1,

Figure 3 is a detail section taken on the line 3—3 of Figure 1 and showing in detail the active face of one of the jaws.

Referring more particularly to the drawing the numeral 10 designates a support which in actual practice is preferably a suitably mounted rotatable table adapted to carry a plurality of my clamps indicated as a whole by the numeral 11 and movable step by step so as to bring the successive clamps in front of an operator in convenient position to be manipulated. Obviously any suitable means, not shown, may be provided for maintaining the platform immovable with a selected clamp in position to be emptied or filled as the case may be.

Each of the clamps 11 comprises a relatively stationary member which may conveniently be formed as a casting and which includes a plate-like base or attaching portion 12 bolted or otherwise secured, as at 13, to the support 10. Each stationary member also comprises a jaw 14 of right angular shape, that is to say having

right angularly disposed portions or in other words substantially of V-shape. For the sake of strength it is preferable that there be provided pairs of ribs or webs 15 extending from the outer sides of the jaw and merging into the base or attaching portion 12.

Each clamp also includes a relatively movable member likewise capable of being formed as a single casting and having a base portion 16 and a right angularly shaped jaw 17 disposed opposite and made complementary to the jaw 14 so that the space between the jaws will be rectangular and the jaws capable of engaging against all four sides of a rectangularly shaped article positioned between them. It is preferable to provide outwardly and downwardly inclined ribs or webs 18 extending from the outer faces of the jaw 17 and merging into the base 16. The movable member of the clamp is movable toward or from the stationary member and is provided with upstanding apertured ears 19 on the top of its base portion 16, these ears slidably engaging upon spaced parallel guide rods 20 which project from the upstanding flange portion 21 of a stationary support 22 which is bolted or otherwise secured at 23 upon the support 10.

The means for operating the relatively movable clamping member comprises a screw 24 equipped with a handle 25 and threaded through a hub 26 on the upstanding flange 21, the free or inner end of this screw being unthreaded and engaging revolubly within a socket 27 on the movable clamping member. For holding the screw against longitudinal movement with respect to the movable clamping jaw I may simply provide a screw 28 threaded through the side of the socket 27 and having its end engaging within a peripheral groove 29 in the unthreaded inner end of the screw. By virtue of this construction it will be seen that by rotating the handle 25 in one direction or the other the jaw 17 will be caused to move toward or away from the jaw 14 as the case may be depending upon whether it is desired to effect or release clamping action upon the pieces to be worked upon.

A feature of importance is the formation of each portion of each of the jaws 14 and 17 with a vertical series of serrations 30, one set of serrations being near the edge of one portion of the jaw and the other group or series being located on the other portion of the jaw adjacent the angle.

In the operation of the device it will be understood that initially the movable jaw 17 must be retracted with respect to the stationary jaw 14. The operator takes a piece of wood indicated at 31 which is intended to be the core of the furniture leg or other object to be built up, and applies to the four sides thereof blocks 32 which are glued to the core and to one another, the arrangement being shown in Figure 1. The proper procedure is to have the blocks 32 of such width that one edge of each will project out slightly beyond the flat outer face of the one next adjacent, these projecting edges being located at the series of serrations 30 on the jaws. The core with the blocks glued on is inserted between the stationary and fixed jaws 14 and 17 and its proper position may be determined or fixed by letting it slide through the clamp until it engages against an adjustable stop 33 beneath the table 10. The handle 25 is then turned so that the screw 24 will be rotated whereupon the movable jaw 17 will be forced toward the fixed jaw 14, the core 31 with the applied blocks 32 being then firmly clamped. The projecting edges of the blocks 32 will be compressingly engaged by the groups of serrations and consequently slippage will be entirely prevented. Assuming that a plurality of the clamps is mounted upon a rotatable table 10 as indicated the successive clamps are brought into play for clamping a plurality of the cores with the blocks applied. Provided the table is of sufficiently large size it will be understood that by the time all of the clamps have been filled and the table has consequently made a complete revolution the assembly first clamped may be removed and the successive ones likewise removed and stacked in convenient position for further treatment, the intention being that the time for rotating the table once will be sufficient to effect setting of the glue. By means of this device the work of preparing material for the turning out of parts of furniture or the like will be greatly expedited as there is but one operation involved in effecting the necessary clamping action to insure maintaining the parts in proper position and against any possibility of slipping while the glue is setting.

From the foregoing description and a study of the drawing it will be seen that by the use of my device a great saving in time and labor and consequently the cost of production of furniture or other articles may be effected. It is believed that the construction, operation and advantages will be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that the disclosure is merely an exemplification of the principles involved as the right is reserved to make all such changes in the details of construction as will widen the field of utility and increase the adaptability of the device provided such changes constitute no departure from the spirit of the invention or the scope of the claims hereunto appended.

Having thus described the invention, I claim:

1. Means for preparing built up wooden pieces to be glued together, comprising a movable support and a series of clamps mounted thereon, and adjustable stop means adjacent the support engageable by the built up pieces for limiting their projection through the support, each of said clamps comprising but a single pair of jaws each formed to engage against two adjacent sides of a built up piece.

2. A wood working clamp comprising relatively movable jaws and means for moving the same toward or from each other, each jaw being of angular formation and capable of engaging against adjacent surfaces of a built up assembly of pieces and formed with two series of serrations, one adjacent and the other spaced from the vertex.

3. A wood working clamp comprising relatively movable jaws and means for moving the same toward or from each other, each jaw being of angular formation and capable of engaging against adjacent surfaces of a built up assembly of pieces having one edge of each projecting beyond the adjacent flat side of the next, said jaws having serrated portions engageable by said projecting edges.

4. A wood working clamp comprising a stationary jaw and a movable jaw and screw means for moving the same, each of said jaws being of right angular formation and engageable against opposite sides of an assembly of built up pieces and formed with two series of serrations, one series

being adjacent the vertex and the other spaced therefrom.

5. A wood working clamp comprising a stationary member including an attaching plate portion and an angular jaw, a relatively movable member including a base portion and an angular jaw opposite and complementary to the first named jaw for defining a rectangular space between them, screw means carried by said stationary member and connected with the movable member for moving the latter, and means on the jaws penetratingly engageable with the work.

6. A wood working clamp comprising a relatively stationary member having an upstanding angular jaw thereon, a relatively movable member including a base portion and an angular jaw rising therefrom, spaced guide ears on the base portion of the movable member, a stationary support having spaced guide rods thereon cooperating with the first named guides, and screw means passing through said support and connected with said movable member for operating the same, said jaws being disposable against opposite sides of an assembly including a rectangular core and slabs disposed against the sides thereof, portions of said jaws contacting flatly against the outer sides of adjacent slabs and other portions of the jaws being formed to accommodate and apply pressure to the edges of the other slabs.

7. A wood working clamp comprising a relatively stationary member having an upstanding jaw thereon, a slidable member having a jaw thereon opposite to and coacting with said first named jaw, said slidable member including a plate portion provided with spaced upstanding apertured ears and a socket, a stationary support provided with a nut portion and a pair of spaced parallel guide rods slidable through said ears, and an operating screw threaded through said nut portion and having a rotatable and non-slidable engagement within said socket, said jaws being each of right angular shape having portions of their faces grooved out to define spaced projections.

8. A wood working clamp for holding during drying an assembly consisting of a central core surrounded by a plurality of flat blocks each having an edge projecting beyond the flat side of the next adjacent one, said clamp comprising a pair of relatively movable jaws of angular form adapted to receive between them the assembly with the jaws each engaging against two adjacent sides of said blocks, each jaw being formed with a series of serrations near one edge thereof and a second series of serrations near the angle, said series of serrations being penetratingly engageable with the projecting edges of the blocks when the jaws are moved relatively into clamping engagement with the assembly.

9. A wood working clamp comprising a relatively stationary member including a base, an upstanding plate portion and a pair of spaced parallel guide rods carried by the latter, a slidable member including a plate portion and an upstanding angular jaw, spaced upstanding apertured ears on the base portion of the slidable member slidably receiving said guide rods, an operating screw equipped with a handle and threaded through the plate portion of said relatively stationary member and having a swivel connection within the relatively movable member, and a fixed jaw cooperating with said slidable member, said jaws being of angular shape and engageable against opposite corners of an assembly including a core and slabs lying against the faces of the core, and means on said jaws cooperating with said assembly to apply pressure to the edges of the slabs without detracting from the pressure applied to the outer flat faces thereof.

10. A wood working clamp comprising a relatively stationary jaw and a relatively movable jaw, both of angular formation, the faces of said jaws being formed with series of projections in spaced relation to the vertices.

11. A wood working clamp comprising relatively movable jaws and means for moving the same toward or from each other, each jaw being of angular formation and adapted to be engaged against opposite corners of an assembly including a central core and a plurality of slabs to be glued to the faces of the core, each of said jaws having flat inner faces adapted to apply pressure to the faces of adjacent slabs and having other portions formed for engagement with the edges of certain of the slabs and to have penetrating engagement therewith for applying edgewise pressure without detracting from the pressure exerted by the flat faces of the jaws against the flat outer surfaces of the slabs.

12. In a wood working clamp, relatively movable jaws and means for moving the same toward or from each other, said jaws being of angular shape and engageable against opposite corners of an assembly formed as a central core and slabs to be glued against the faces thereof, portions of the jaws being designed to apply pressure to the outer flat faces of the slabs and other portions of the jaws being designed to apply pressure to a portion of the edges of the slabs.

13. In a wood working clamp, a plurality of relatively movable jaws of angular shape and engageable against spaced corners of an assembly formed as a central core and slabs to be glued against the faces thereof, and means for causing said jaws to approach or recede from the assembly, portions of the jaws being designed to apply pressure to the outer flat faces of the slabs and other portions of the jaws being designed to apply pressure to a portion of the edges of the slabs.

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