O. BERGSTROM.

CLAMPING MACHINE.

APPLICATION FILED JUNE 16, 1916.

1,273,136.

Patented July 23, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

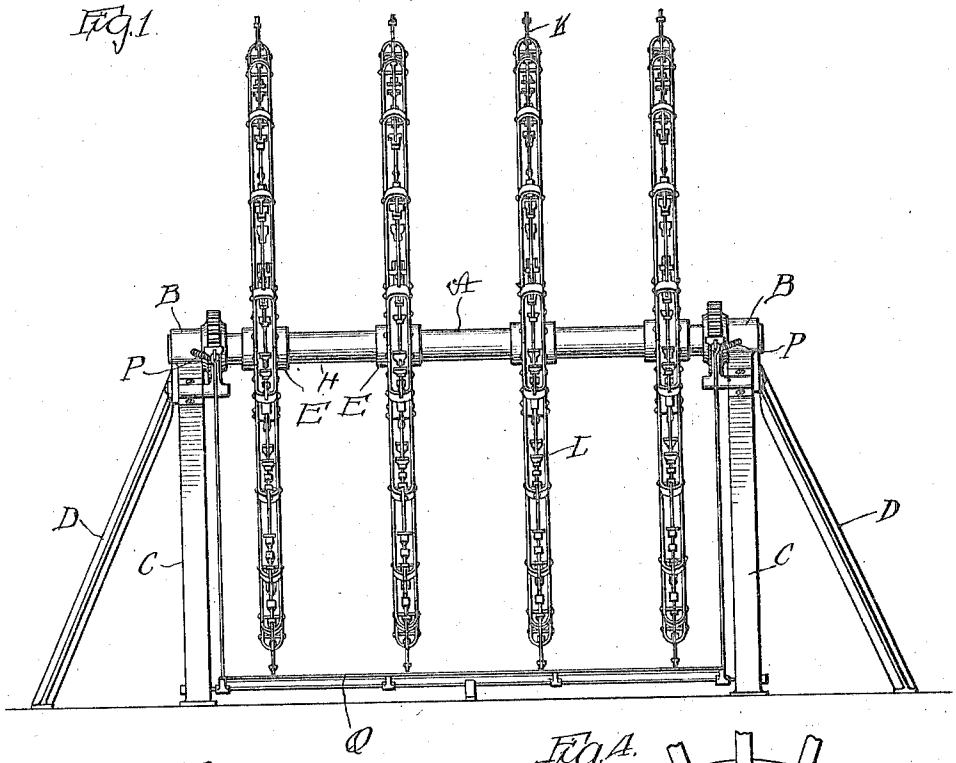


Fig. 3.

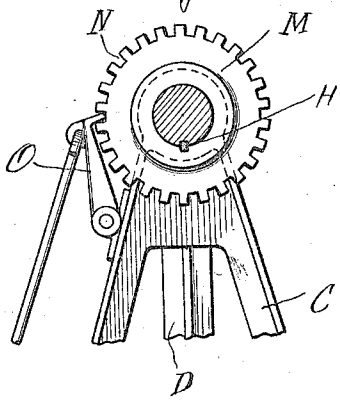
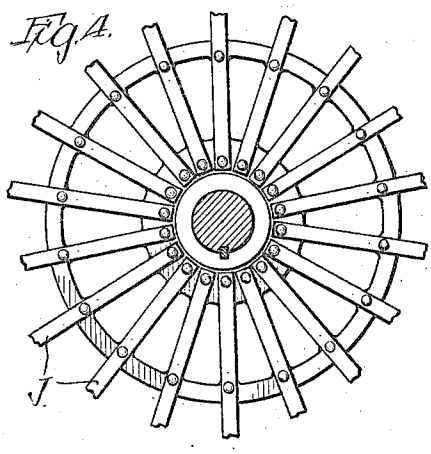


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 2.

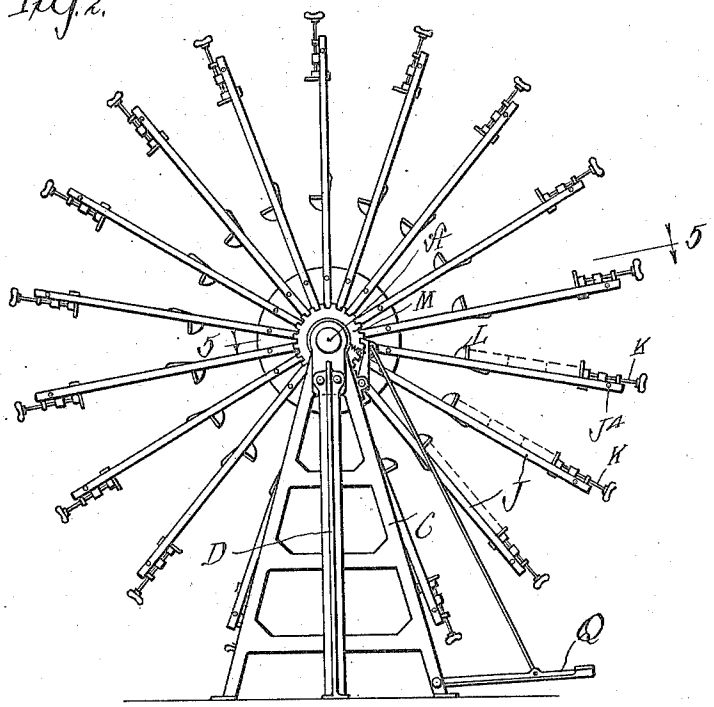


Fig. 5.

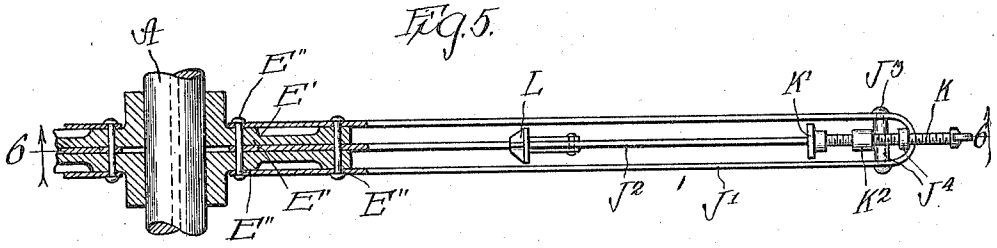
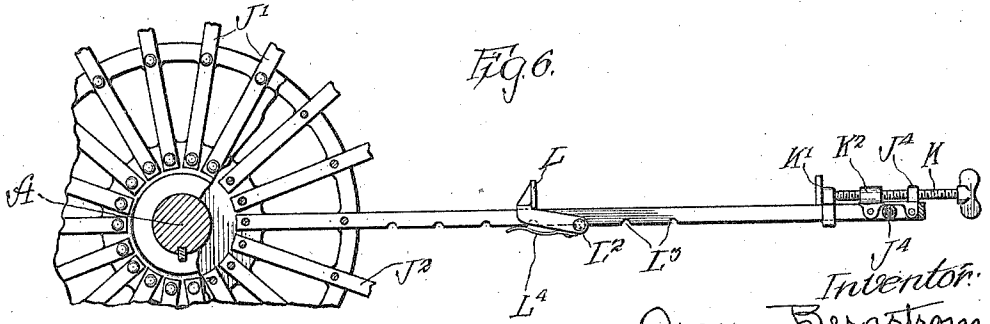


Fig. 6.



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UNITED STATES PATENT OFFICE.

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CLAMPING-MACHINE.

1,273,136. Specification of Letters Patent. Patented July 23, 1918.

Application filed June 16, 1916. Serial No. 104,079.

To all whom it may concern:

Be it known that I, OSCAR BERGSTROM, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Clamping-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in clamping machines for use in making glued joints.

The object of my invention is to provide a rapidly operable machine particularly adapted for making wide boards or panels by gluing together two or more narrow strips or boards. Such a process is frequently necessary in building up parts of furniture and particularly table boards and the like.

A further object of my invention is to provide a machine of the kind described which can be quickly adjusted to receive boards of different width, which shall be provided with a plurality of sets of longitudinally spaced clamps for receiving a plurality of similar boards, and which shall be conveniently arranged for quick adjustment for receiving and holding different lengths of boards.

Another object of my invention is to provide a machine of the character described having a series of clamps mounted for simultaneous movement and adapted to be presented in succession to an operator for conveniently successively placing and removing the boards being operated upon.

My invention consists in a clamping machine, having a series of heads movable on a common axis for spacing same relatively to each other and a plurality of radially projecting clamping members carried by each head, the clamps on the several heads being arranged in alinement, and the several heads being mounted for simultaneous rotation to position the several sets of alined clamps successively in convenient position for the operator to place and remove the articles which it is desired to secure in the clamps.

My invention also includes a conveniently releasable locking mechanism for holding the several heads against rotation.

My invention also consists in the several features of construction and in the combinations and relations of parts, devices and mechanisms by which I am enabled to attain the above-mentioned and other objects, and all as hereinafter described and particularly pointed out in the appended claim.

My invention will be more readily understood by reference to the accompanying drawings forming part of this specification and in which:

Figure —1— is a front elevation of a machine embodying my invention.

Fig. —2— is an end elevation thereof.

Fig. —3— is a vertical fragmentary cross-section on the line 3—3 of Fig. —1— taken in the direction of the arrows.

Fig. —4— is a vertical fragmentary section also taken on the line 3—3 of Fig. —1— but looking in a direction opposite to the arrows.

Fig. —5— is an enlarged fragmentary horizontal section on the line 5—5 of Fig. —1— and showing one of the movable heads and one of the arms carried thereon.

Fig. —6— is a vertical fragmentary section on the line 6—6 of Fig. —5—.

My improved machine comprises a horizontal longitudinal member A preferably in the form of a cylindrical shaft mounted, at its ends for rotation, in elevated bearings B carried or formed upon end standards C. The standards C are adapted to stand upon the floor and hold the shaft B at the proper height. I preferably strongly brace the standards rigidly in position by means of diagonal rigid braces D.

Upon the shaft I mount a plurality of heads E. These heads are in the form of circular flanges F having hubs G of suitable length which are adapted to slide longitudinally on the shaft A and for positioning the heads relatively to each other thereon I hold the heads circumferentially in alinement by means of a long key or spline H fixed to the shaft providing each head with a key-way to receive the key.

Each head carries a great many radially disposed clamping devices each comprising an arm J which carries a clamping screw K at its outer or free end and an adjustable bracket L or stop between its ends, adapted to be positioned on the arm to form an abutment for the inner edge of the article to be clamped. The inner end of the clamp

screw carries a swiveled abutment or stop K^1 adapted to be forced toward the inner abutment to properly clamp the boards or similar articles therebetween.

I space the arms J equally around the head E and I arrange the arms on the several heads in longitudinal alinement so that when a particular clamp arm or one head is brought into position before the operator there will be a clamp arm on each of the several other heads in alinement therewith, and consequently a board to be clamped will find a support upon a member of the clamp arms, depending, of course, upon the length of the board and the relative spacing of the heads.

To properly clamp a board for best work in making glue joints the clamp should be spaced in accordance with the width of the strips being clamped, in other words, if the strips which are to be glued together to form a board are relatively narrow the clamp should be relatively close together, and furthermore, one clamp should be arranged relatively near to each end of the article. This necessitates the adjustment of the clamps longitudinally when changing from one length of article to another, and sometimes when the dimensions of the pieces out of which the article is being built up are changed.

My machine is particularly adapted for the rapid adjustment of the clamps for this purpose, for the reason that all of the clamps are permanently maintained in their relatively circumferential relations and all of the clamps carried by each head are simultaneously adjusted longitudinally of the machine. Consequently when one longitudinal row of the clamps has been adjusted to fit a certain article, all of the longitudinal rows of clamps are ready to receive similar articles and the time necessary for this adjustment is reduced to a minimum.

To hold the shaft A against rotation and the row of clamps being operated at the proper height and stationary, I provide a simple locking mechanism comprising a toothed wheel or disk M keyed to the shaft, one at each end, and just inside of the standards C. These wheels have notches H in their outer edges adapted to receive the free ends of dogs O pivotally mounted at their other ends upon the upper ends of the standards C. These dogs are normally held in engagement with the disks M by tension springs P connected at their other ends to said standards C. To withdraw the dogs from engagement with the disks M, I provide a foot-bar or treadle Q pivotally mounted at its ends upon the lower parts of the standards C to swing up and down, and I connect the ends of this treadle D to the free ends of the dogs O by links R so that when the treadle Q is depressed against the action of the springs P the dogs are withdrawn from the notches in the disks M and the shaft A with the clamps can then be rotated to bring a new set of clamps into position for operation.

Upon release of the treadle the springs P return the dogs into engagement with the disks and lock the shaft against rotation.

While the broad idea of my invention includes a plurality of circumferential sets of clamps longitudinally relatively adjustable in the manner described, I have provided a construction of clamps and movable heads which is extremely light relatively to its rigidity and strength, and which can be manufactured with a minimum expenditure of time, labor and cost of material.

The heads E comprise several parts solidly and rigidly bolted or riveted together and rigidly holding the inner ends of the clamp arms J in proper spaced relation and in proper relative position.

Each of the clamp arms J comprises a U-shaped outer bar or strap member J^1 and a central bar J^2. The outer end of the middle bar is rigidly connected to the free end of the outer member by a transverse rivet J^3 carrying tubular spacers J'' for holding the bar J^2 in proper central position.

I rigidly mount a threaded nut K^2 on the outer end of the middle bar to receive the screw K, and the abutment K^1 is slidingly mounted on the middle bar to prevent the same rotating with the screw K.

The inner abutment L is also mounted for longitudinal adjustment on the middle bar J^2 and is provided with a forwardly projecting rigid arm L^1 on its lower side which straddles the bar J^2 and carries, adjacent to its forward end, a cross-pin L^2 adapted to be received in any one of a number of spaced notches L^3 in the lower edge of said bar. The abutment L is held against longitudinal movement on the bar by the engagement of the pin L^2 in the notches L^3 and said pin is normally pressed upwardly to engage one of the notches by means of a flat spring L^4 and contacts at its rear end with the underside of said bar J^2 to the rear of the abutment L. The abutment L is thus quickly adjustable longitudinally of the arm J to roughly set the clamps ready to receive a certain width of board and the final or clamping adjustment is effected by means of the screws K.

Each of the hubs E comprises two flanged members E^1 each having an inner flat face and adapted to receive between them the inner ends of the middle bars J^2. These flanged members E^1 are rigidly clamped together and upon the bars J^2 by bolts or rivets E'', two of the fasteners E'' passing through each bar J^2 and holding same in its proper radial relation to the shaft A. These fasteners also secure the outer U-shaped

members J^1 rigidly to the hubs E^1 and in proper parallel relation to the middle bars J^2, there being holes provided in the inner ends of the U-shaped members J^1 to receive these fasteners.

Preferably I make the flanged members E^1 of skeleton form, as shown, for the sake of lightness, and I provide raised portions E''' on the outer surface of the flanges to contact with the inner ends of the U-shaped members at points surrounding the fasteners E'' and whereby the labor in finishing the flanges is greatly reduced.

In operation I first adjust the heads E longitudinally of the shaft to correspond with the length of the boards which I desire to clamp in the machine. This adjustment of the machine is very quickly effected as the clamps of the respective heads are held in longitudinal alinement, and the whole circumferential series carried by each head are obviously adjusted longitudinally of the shaft simultaneously.

Having adjusted the machine as described I then adjust the several inner clamps in each longitudinal row in accordance with the widths of the boards to be clamped, at which time the machine is ready for operation. I place the several parts or strips which are to form a complete board upon one of the longitudinal rows of arms J, first having applied glue to the contacting edges and then I tightly clamp the strips together by manipulating the screws K. During this operation the shaft A is held against rotation by means of the locking mechanism. Then the shaft is released by stepping upon the foot-bar Q and the shaft A rotated to bring the next longitudinal set of arms J into position before the workman and ready to be filled. I provide a sufficient number of sets of arms J so that, as ordinarily operated, the first board inserted will be ready for removal when the last set of arms J are filled, consequently the operation of the machine can be substantially continuous.

I claim as my invention:

In a clamping machine of the character described, a head adapted to be slidingly mounted upon a shaft and to be held against relative rotation, said head having two opposed flanges, a series of clamp arms secured to the head and each comprising a central bar and an outer U-shaped bar, the outer ends thereof secured rigidly together, the inner end of the central bar positioned between the said flanges, and the inner ends of the outer member positioned against the outer faces of the flanges and fasteners passing through the flanges and the inner ends of all of said bars and rigidly securing said members in position, said arms adapted to carry suitable clamping members.

In testimony whereof I have signed my name in presence of two subscribing witnesses.

OSCAR BERGSTROM.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."