

Sept. 24, 1946.

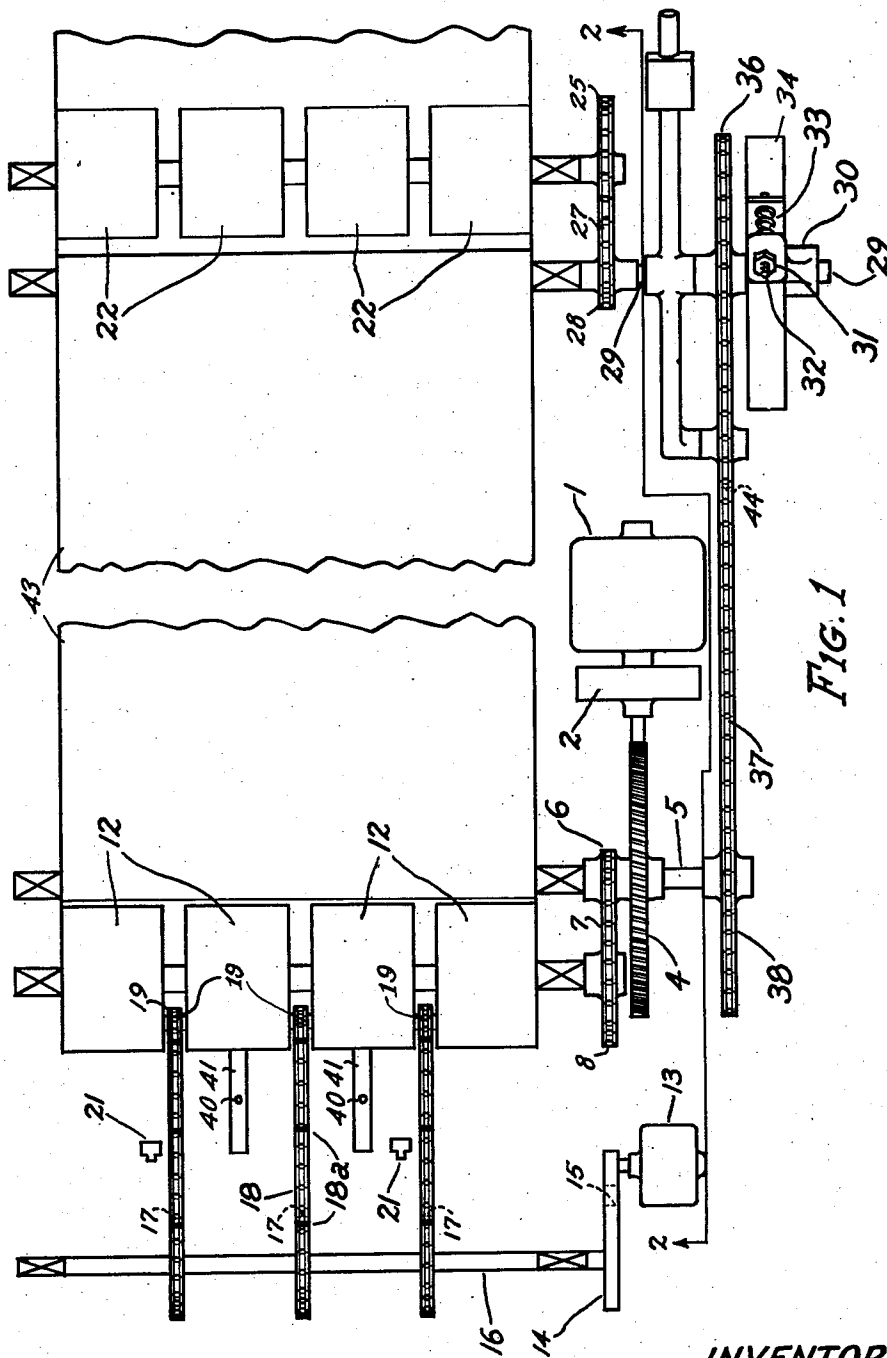
S. H. HALL

2,408,064

CONTINUOUS GLUING MACHINE

Filed Jan. 23, 1942

4 Sheets-Sheet 1

***INVENTOR***

Selden H. Hall

Sept. 24, 1946.

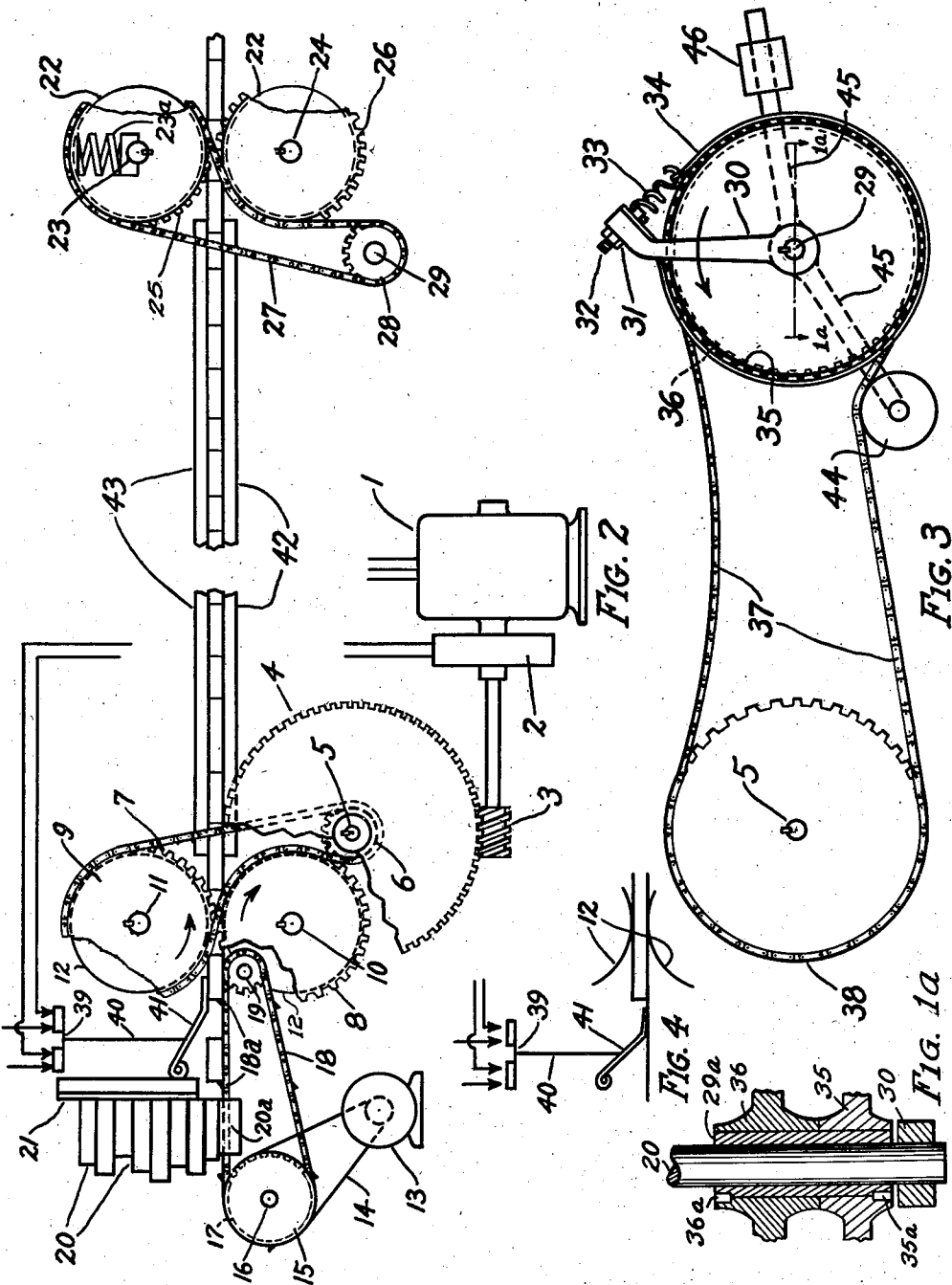
S. H. HALL

2,408,064

CONTINUOUS GLUING MACHINE

Filed Jan. 23, 1942

4 Sheets-Sheet 2



INVENTOR

Selden H. Hall

Sept. 24, 1946.

S. H. HALL

2,408,064

CONTINUOUS GLUING MACHINE

Filed Jan. 23, 1942

4 Sheets-Sheet 3

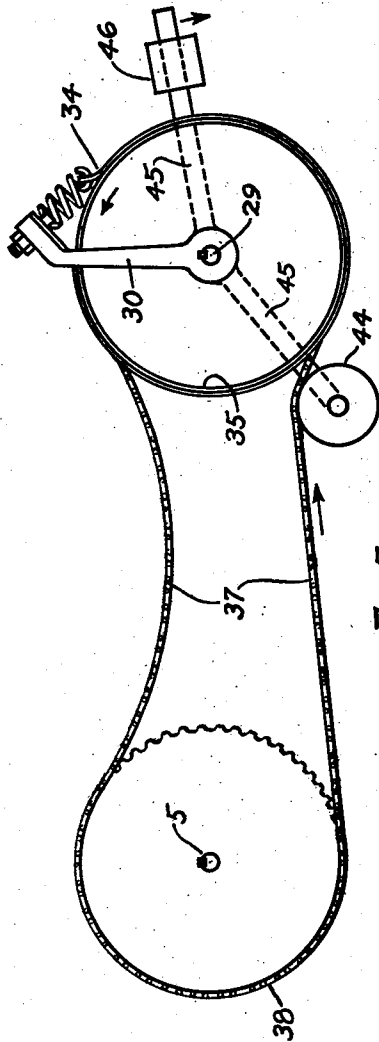


Fig. 3a

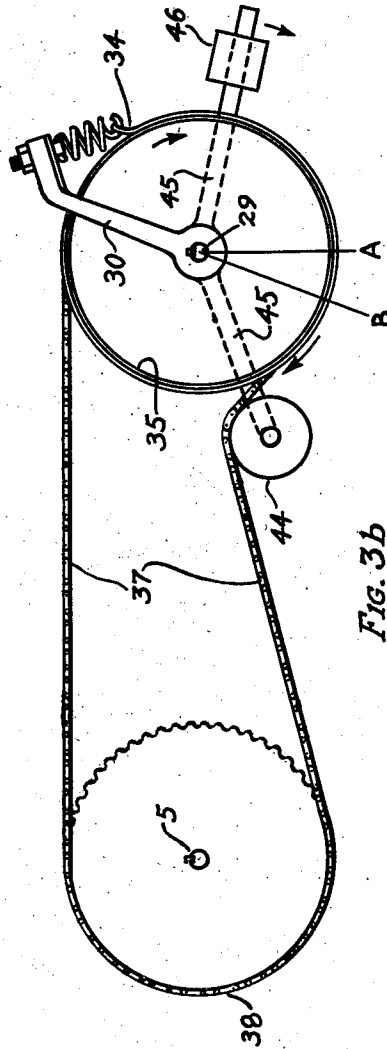


Fig. 3b

INVENTOR

Selden H. Hall

Sept. 24, 1946.

S. H. HALL

2,408,064

CONTINUOUS GLUING MACHINE

Filed Jan. 23, 1942

4 Sheets-Sheet 4

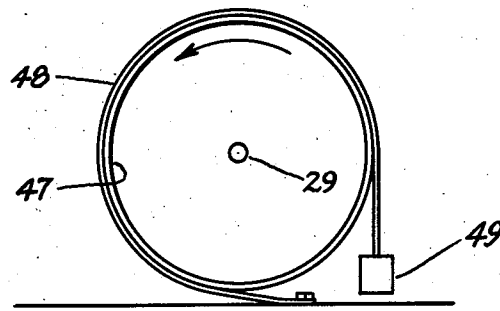


FIG. 5

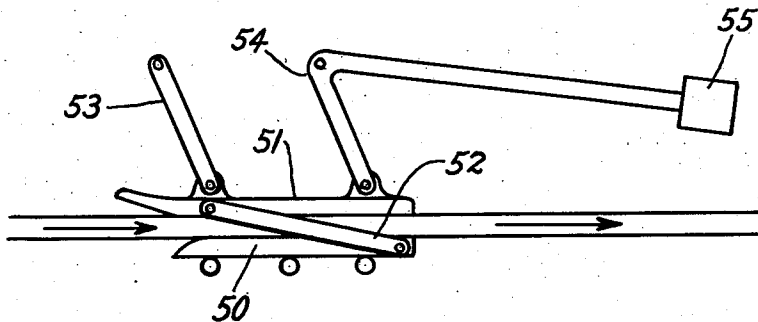


FIG. 6

INVENTOR

Selden H. Hall

UNITED STATES PATENT OFFICE

2,408,064

CONTINUOUS GLUING MACHINE

Selden H. Hall, Poughkeepsie, N. Y., assignor to
James L. Taylor Mfg. Co., Poughkeepsie, N. Y.,
a corporation of New York

Application January 23, 1942, Serial No. 427,973

15 Claims. (Cl. 144—279)

1

My invention is an improved machine adapted to continuously receive a series of edge glued pieces of wood, press the successive units together and, while maintaining the pressure at a uniform intensity, force them continuously into and through a chamber where conditions promoting quick setting of the glue are maintained and finally, after emergence from the chamber and without reducing the pressure on the joints still within the chamber, release the pressure thereon.

My machine is designed particularly for use with quick setting glues of the resin class which, when heated to a correct temperature, make strong joints in from two to five minutes instead of the one to three hours required by animal glues.

The technique of handling animal glue so that the glued joint is uniformly stronger than the wood itself is old and well known. It requires that the glue shall set under clamping pressure for one to three hours and then be allowed to season or dry out for twenty-four hours before it can be machined.

Resin glues are attractive to industry because the time for setting under pressure is reduced to two to five minutes, and the seasoning time is reduced to five or ten minutes. That is the total time from application of the glue till the parts are ready for further machining takes fewer minutes than animal glue requires hours.

The elimination of space for storage of a full days output constitutes a great economy.

Some of the requirements for producing good strong joints with quick setting resin glues which, in so far as I know, have never been met by any previous machine are (a) the joints must be placed under pressure immediately after coating with the glue; (b) the wood must be heated for a proper time varying from two to five minutes depending largely on the thickness of the wood being glued; (c) the pressure, when once applied, must be maintained uniform at full intensity (i. e. without "breathing" by intermittent partial release and restoration of the pressure) until the setting has been completed; (d) release of pressure from units in which setting of the glue has been completed must be accomplished without diminution, even temporarily, of the pressure on joints in which the setting has not been completed.

One technique of using resin glues, which is in some use at the present time, and which is worthy of mention, is that in which the resin glue is applied to one of the edges to be joined

2

and a catalyst or fast setting hardener is applied to the mating edge. When these edges come together, the chemical reactions start at once and "pre-curing" takes place, even before heat is applied. Unless full pressure is applied almost at the instant of contact of the pieces, the maximum strength of the joint cannot be realized.

The construction of my mechanism for feeding individual boards is such that edges do not come in contact until they are close to the mechanism for applying pressure to the joint, and, when pressure is applied, it reaches full intensity almost instantaneously.

The object of my invention is to provide a machine in which a continuous series of pieces of wood can be fed, put under pressure, edge to edge, heated and held under pressure and heat for a predetermined time, then successively released from pressure and discharged from the machine.

The glued material may be discharged from the machine as a continuous ribbon, or, by leaving "dry" (without glue) joints at proper intervals, may be discharged in units of any desired size.

Another object is to feed the individual pieces of wood in a manner that prevents contact of their edges until immediately before the application of pressure thereto.

Another object is to provide means for adjusting the pressure to any desired value so that the pressure per unit of area will be correct for thick or thin stock.

A further object is the conservation of power by "feeding back" forces, developed by retarding the emerging ribbon of stock, to assist in forcing the entering ribbon into the zone of pressure.

I know that it is old to force successive pieces of wood by reciprocating pushers into a heated chamber, where it is held to a certain extent by friction, but this operation causes serious intermittent variations in the pressure between pieces and may result in "breathing" that will cause inferior joints.

An important object of my invention is the complete elimination of intermittent variations in pressure on the joints while setting.

In the accompanying partly diagrammatic drawings, which illustrate an embodiment of my invention,

Figure 1 is a plan of a complete machine.

Figure 1a is an enlarged fragmentary vertical longitudinal sectional view on the line 1a—1a of Figure 3.

3

Figure 2 is a side view of my machine taken on the line 2—2 of Figure 1, i. e. with the "feed back" device removed.

Figure 3 is a side view of the "feed back" mechanism.

Fig. 3a is a side view, similar to Fig. 3, showing the relative positions of parts during normal forward movement.

Fig. 3b is a similar view showing the positions of the same parts after taking up some shrinkage by backward movements.

Figure 4 is a side view of the mechanism for automatically stopping the machine if there is no material ready to feed into it.

Figures 5 and 6 show "hold back" devices that may be used in small machines.

To avoid confusion and to leave the drawings more open, all supporting framework, which can be designed by any competent engineer, has been omitted and the driving mechanism reduced to the fewest and simplest elements.

Referring to the drawings—

A motor 1 through a clutch 2 (preferably electric but which may be of any easily engageable and disengageable type), worm 3 and worm wheel 4 drives a cross shaft 5. The shaft 5 through a sprocket 6, chain 7, and sprockets 8 and 9 drives the lower and upper shafts 10 and 11 carrying the forcing rolls 12, usually having serrated surfaces, at the entrance end of the machine.

A motor 13 through a belt 14, pulley 15 and shaft 16 drives sprockets 17 which, in turn, drive feed chains 18, having lugs 18a and being held tight by idler sprockets 19, which, as shown in Figures 1 and 2, are located between the rolls 12 only a short distance from their lines of contact with the work passing between them. Boards 20, with the required glue on their edges may be placed on top of supports 20a, which hold them just above the chains, and against the stops 21, which are set at a height to allow only one board at a time to pass under them.

At the discharge end of the machine retard rolls 22, being forced to rotate by the boards passing between them will, through shafts 23, and 24 and sprockets 25 and 26, keyed thereto, drive chain 27 which, in turn, drives sprocket 28 and, through shaft 29, to which the sprocket and arm are keyed, drives arm 30. This arm, through nut 31, screw 32, and spring 33, drags a belt 34 wrapped around pulley 35, which with sprocket 36 connected rigidly thereto, constitutes a unit mounted loosely on shaft 29. A chain 37 connects sprocket 36 with a similar sprocket 38 on shaft 5. Because the retard rolls 22 are of smaller diameter than the forcing rolls 12, they rotate faster than the forcing rolls and will compel the arm 30 and belt 34 to rotate faster than the pulley 35, which, by the sprocket 36, chain 37, and sprocket 38 is compelled to rotate at the same relatively slow speed as the shaft 5. The arm 30, spring 33, belt 34, and pulley 35 constitute a friction device which can be adjusted for any desired tension, and simultaneously performs two functions: by acting as a brake it yieldingly resists rotation of the retard rolls, and, as a clutch, it transmits power from the retard rolls to the forcing rolls. In performing the latter function, the faster moving belt is normally the driving member and the slower moving pulley the driven member. However, when feed is stopped and work within the heated chamber shrinks, the pulley 35, being turned backward by weight 46 acting through the lever 45, idler 44, chain 37, and sprocket 36, drives the belt backward and,

4

through the intervening mechanism, drives the retard rolls 22 backward.

The arm 30, spring 33, belt 34 and pulley 35, constitute a friction clutch which can be pre-adjusted for any desired tension and in which the belt is normally the driving member and the pulley the driven member, though during the operation of taking up shrinkage, during momentary stoppage of feed, the pulley drives the belt, and, through the intervening mechanism drives the retard rolls backward.

As shown in Figure 1a the hubs of pulley 35 and sprocket 36 are secured by keys 35a and 36a to a sleeve 29a which is freely rotatable on the shaft 29.

A switch 39 operated by a rod 40 from a lever 41 energizes the clutch 2, so that the force rolls 12 will be driven whenever there are boards adjacent to the entrance side of the rolls and, as shown in Figure 4, breaks the energization whenever there are no boards ready to enter the rolls.

Extending from close to the discharge side of the force rolls 12 to close to the entrance side of the retard rolls 22 and having its top in the same plane as the tops of the lower rolls is a hot plate 42 which may be of the type shown in copending application No. 427,987 filed January 23, 1942, by Raymond W. Burns, or of some other approved type. A similar hot plate 43 is adjustably supported at a distance above plate 42 equal to the thickness of the stock being treated. The space between these plates constitutes a heated setting chamber. The upper forcing and retard rolls are held down toward the lower ones by weights or springs 11a and 23a, or equivalent weights, pressing against the shafts 11 and 23, to provide the pressure needed to give them a proper bite on the work passing between them.

A weight 46, acting through a lever 45, pivoted on shaft 29, presses an idle sprocket 44 against the driving side of chain 37, which during normal operation is nearly straight (Fig. 3a) and by moving the chain to an angle, as shown in Figure 3b, turns sprocket 36 backward and, through the intervening mechanism, turns the rolls 22 backward, thus maintaining the pressure on the work even if drying in the space between the hot plates causes shrinkage during momentary stoppage of feed.

In operation, boards with glue on the joint surfaces or with glue on one surface and catalyst on the mating surface are stacked on the supports 20a against the stops 21. As each lug 18a on the chain 18 which is normally moving much faster than the work passes between the rolls comes around it will pull a board 20 beneath the stop 21 and carry it toward the force rolls 12. When the leading board on the chain strikes against the board between the rolls, which will be only a few seconds before the joint between the two boards enters between the rolls, the chain can move at only the speed that work is passing through the rolls and the belt 14 slides on its pulley until the leading board moves far enough ahead to allow the lug 18a behind it to pass under its rear edge. The chain then resumes its normal fast speed and quickly moves the next board up.

In other words, the idler sprocket is at such distance from the lower forcing roll that the forward edges of the leading board being fed by one of said lugs on said chain will contact the rear edge of the next preceding board and be gripped between said forcing rolls before said lug disengages itself from the rear edge of said leading board.

5

When the space between the stop 21 and the rolls 12 has a board in front of each set of lugs 18a the boards will lift the lever 41, the rod 40 and the switch 39, and send current to energize the clutch 2 and start the forcing rolls 12. If, because of inattention of the operator or for any other reason, there are no boards between the stack and the forcing rolls, the lever 41, rod 40 and switch 39 will fall and, by deenergizing the clutch 2, stop the rolls 12 before the last board can pass out from between them.

As the boards pass between the lower and upper hot plates 42 and 43 they are held in line and are heated so that the glue will set quickly.

When the ribbon of boards reaches the retard rolls 22 and passes between them, it forces them to revolve and as they are smaller than the forcing rolls 12, they will revolve faster and, through the intervening mechanism, force the arm 30 to revolve faster than the pulley 35 which, by the sprocket 36, chain 37 and sprocket 38 is compelled to rotate at the same speed as the shaft 5.

As the arm 30 rotates in the direction of the arrow, it stretches the spring 33 and loosens the belt 34 until it can slide around the pulley 35 at a rate to compensate for the difference in speed of the shafts 29 and 5. By turning the nut 31, it is possible to cause any desired tension in the spring 33 and hence, by transmission backwards through the arm 30, shaft 29, sprocket 28, chain 27, sprockets 26 and 25, shafts 24 and 23, and rolls 22, cause any desired pressure on the joints between the boards. It will be readily seen that any shrinkage of work while passing between the hot plates 42 and 43 will result in only a slightly slower rotation of retard rolls 22 and less slipping of the belt 34 on the pulley 35.

During normal operation, all rotating parts, except sprockets 8 and 26, and shafts and rolls rigidly connected therewith, the idler 44 and the feed mechanism including parts numbered 13 to 19 inclusive, turn counterclockwise. When the machine stops for any reason, including automatic stoppage when there is no work ready to enter it, the boards in the heated setting chamber will be overheated and will shrink until, if no take-up were provided, the pressure between them would be relieved and they might even separate. During any stops the worm 3 will, through the connecting gearing, hold the forcing rolls 12 stationary and the only way that shrinkage can be taken up and pressure maintained is by turning the retard rolls backward. At such times, the idler 44, held forcibly against the chain 37 by the clockwise torque from the weight 46 acting through the lever 45, will move upward from the position shown in Fig. 3a toward that shown in Fig. 3b, taking up the slack in the upper run of the chain 37 by pulling the portion of the chain to the right of the idler 44 toward the left, and thus causing the sprocket 36 to turn clockwise and, through the intervening mechanism causing the retard rolls 22 to turn backward (i. e., the upper roll clockwise and the lower roll counterclockwise), thus forcing the boards that were emerging from the heated setting chamber, back into the chamber and maintaining pressure on the joints between the boards in the chamber. The angle A-29-B indicates backward movement of sprocket 37.

In small machines, in which power consumption is not a serious matter, an adjustable hold back can be substituted for the feed back described above. Such a device is shown in Figure 5 in which a pulley 47 is keyed to the shaft 29,

6

and is surrounded by a belt 48 having its forward end permanently fastened and a weight 48 at its trailing end. As the pulley turns in the direction of the arrow it lifts the weight until the pressure of the belt against the pulley is only sufficient to cause the friction required to support the weight. By selecting a proper weight any desired pressure in the joints can be produced.

Another way to provide adjustable yielding resistance to emergence of work from the machine is by two friction plates at least one of them so supported by links that movement in the direction of travel of the work will cause movement away from and reduction of pressure on the work. Such an arrangement is shown in Figure 6 in which 50 and 51 are friction plates shown connected by a link 52 so that their horizontal movements must be equal and in the same direction. A link 53 supports one end of plate 51 and the other end of a bell crank 54 supports the other end. A weight 55 on the long end of the bell crank resists movement of the two plates in the direction of the arrow.

When friction between the plates and work passing between them is less than enough to support the weight 55, it falls and forces the plates tighter against the work. When the friction is too high the plates are carried with the work until they separate enough to reduce the pressure and the friction to just enough to support the weight. By adjusting the weight, any desired resistance to emergence can be provided.

It is obvious that, for work requiring only light joint pressure, driving rolls on one side and idlers on the other side, or, in extreme cases, a driving roll on one side and a smooth stationary pressure plate on the other side of the work may be sufficient and where the word "rolls" is used in the claims it is intended to include such arrangements.

I have described the normal operation of my machine. It is obvious that, of course, when starting an empty machine, the space between the forcing and retard rolls must be filled with non-glued material in order to retard and put full pressure on the first glued material fed into the machine and also that, in order to maintain full pressure on the last glued material fed into it, the machine must be filled with non-glued material to drive out the last glued joint.

Where I have herein used the word "glue," it is intended to include any substance suitable for cementing pieces of wood together.

I have described my machine as having retard rolls of a smaller diameter than the forcing rolls. It is obvious, however, that they may be of the same diameter if the sprocket 36 has more teeth than the sprocket 38, or an equivalent difference in power transmitting mechanism is provided to give the necessary overrun of the retard mechanism and, where I have herein described the retard rolls as being smaller than the force rolls, I intend such description to include also any mechanism that will cause the needed overrun.

Where in the specifications or claims the word "continuous" is used with reference to feeding, into, passage through, or discharge from my machine, it is intended to describe the action of a continuously rotating roll as distinguished from the intermittent operation of reciprocating pushers and to be limited to continuous feed for only that time when material is supplied at the entrance to the machine. It will be noted that provision has been made for automatic stoppage of

the foregoing rolls if no material is ready to be fed.

I claim:

1. In a continuous gluing machine the combination with a heated glue-setting chamber, continuously driven feed rolls adapted to force a series of boards having glue coated edges into and through said chamber, wherein the glue is set and the boards cemented together, retard rolls outside of but closely adjacent the outlet from said chamber and rotatable by said boards passing in contact with them, of a preadjustable friction clutch, power transmitting mechanism between said retard rolls and clutch, said clutch being driven by said retard rolls through said mechanism and offering preadjustable yielding resistance to rotation of said rolls, whereby preadjustable yielding resistance is offered to emergence of said boards from said chamber.

2. In a machine for continuously joining together edge to edge, boards having glue on their edges, in combination, two hot plates, one above the other separated by a distance equal to the thickness of the boards being joined, and forming a heated glue setting chamber between them, a pair of power driven forcing rolls adjacent the entrance to said chamber, whereby boards may be driven, one after another, into and through said chamber where the glue will be set and shrinkage may occur, a pair of retard rolls adjacent the exit from said chamber and driven by emerging boards passing between them, said retard rolls being smaller than said forcing rolls and therefore compelled to rotate faster than the forcing rolls, a chain of gearing, connecting the relatively fast moving retard rolls with the relatively slow moving forcing rolls whereby the retard rolls tend to drive the forcing rolls at the higher speed of the retard rolls and, as an element in said chain of gearing, a preadjustable slidable friction clutch whereby any desired tension in said chain and retarding effect on boards passing between the retard rolls may be effected and slipping to compensate for difference in speed permitted.

3. A continuous gluing machine as described in claim 2, in which the friction clutch comprises an element normally positively driven by the retard rolls and a driven member frictionally engaged by the said element and normally driven thereby, there being a weight and force transmitting mechanism between the weight and said driven member whereby the weight tends to move the driven member and, through the said element and intervening mechanism, move the retard rolls in a direction opposite to their normal movement, whereby, during momentary stoppage of feed, the direction of movement of emerged boards will be reversed, shrinkage taken up and pressure maintained.

4. In a gluing machine, the combination with a heated glue setting chamber and means including continuously driven forcing rolls adjacent the entrance thereto to force a series of edge glue-coated objects into and in continuous movement through said chamber, of means to continuously maintain a pre-determined substantially uniform pressure between objects in said chamber, said means including object-engaging elements outside of but closely adjacent the outlet from said chamber influenced to move in one direction by objects emerging from said chamber and a continuously operable adjustably yieldable frictional device operatively connected to said elements for

yieldingly frictionally resisting movement of said objects from said chamber.

5. In a gluing machine, the combination of a heated glue setting chamber, means comprising continuously driven forcing rolls adjacent the entrance thereto to force a series of glue-coated objects into and through said chamber, means to maintain a pre-determined pressure between objects in said chamber including object-engaging elements outside of but closely adjacent the outlet from said chamber movable in one direction by objects emerging from said chamber, and an adjustably yieldable friction device operatively connected to said elements for yieldingly frictionally resisting movement of said objects from said chamber, and mechanism to take up shrinkage of objects during momentary stoppage of feed while within said chamber, said mechanism including a weight and an operative connection between said weight and said friction device for transmitting force from said weight to said elements during said momentary stoppage whereby the weight produces a force acting on said elements in a direction opposite to the direction of movement of said elements by said objects.

6. In a continuous gluing machine, the combination with a heated glue setting chamber and means, including driven rolls adjacent the entrance thereto, to force a series of edge glue-coated objects into and through said chamber, of means to maintain a pre-determined pressure between objects passing through said chamber, said latter means including retard rolls, outside of but closely adjacent the outlet from said chamber and between which the emerging series of glued objects must pass, and an adjustably yielding friction brake consisting of one member connected with and normally driven by said retard rolls and a second member associated with the first-mentioned member offering yieldable resistance to rotation of said first mentioned member and thereby offering resistance to rotation of said retard rolls.

7. In a machine for pressing a continuous series of edge glued objects into a ribbon and holding them under pressure while the glue is setting, in combination, a heated setting chamber, driven forcing rolls adjacent the entrance thereto, retard rolls rotatable by objects passing therebetween located outside of but closely adjacent the outlet from said chamber and being similar to but smaller than said forcing rolls and therefore forced by the ribbon passing between them to rotate faster than the forcing rolls, and means to return power from the retard rolls to the forcing rolls, said means including a chain of gearing connecting the relatively fast moving retard rolls with the relatively slow moving forcing rolls and tending to cause both sets of rolls to rotate at the same speed, and a preadjustable, slidable friction clutch in said chain of gearing, whereby a pre-determined resistance to differential movement is provided while such differential movement is permitted, said friction clutch consisting of two members, one normally driven from the retard rolls and the other frictionally driven by the first one.

8. The combination with a continuous gluing machine as specified in claim 6 of means to take up shrinkage of said objects during momentary stoppage of said objects' forward movement while within the chamber, said means including a weight and an operative connection between said weight and said second-mentioned member for transmitting force from said weight to the second

mentioned member in a direction opposite to that of the first mentioned member's normal movement.

9. In a machine for combining together a series of boards having a catalyst on one edge and a catalyst acceleratable setting glue on the mating edge, the combination of a heated glue setting chamber, continuously rotating upper and lower forcing rolls adjacent the entrance thereto, and continuously operating retard devices adjacent the outlet therefrom with means to so feed successive boards that each one shall contact the preceding one not more than a predetermined few seconds before entering between the forcing rolls, said means including a chain with lugs spaced farther apart than the widest board to be fed, a driving sprocket therefor, friction driven substantially faster than the rate of movement of the forcing rolls, and an idler sprocket, both of said sprockets having their tops at approximately the same level as the top of the lower forcing roll and the idler sprocket being at such a horizontal distance from the lower forcing roll that the forward edge of the leading board being fed by one of said lugs on said chain will contact the rear edge of the next preceding board and said leading board will be gripped between said forcing rolls before said lug disengages itself from the rear edge of said leading board.

10. A continuous gluing machine as described in claim 1, in which the friction clutch comprises an element normally positively driven by the retard rolls through said power transmitting mechanism, and a driven member, frictionally engaged by said element and normally driven thereby, there being a weight and an operative connection between said weight and said driven member for transmitting force from said weight to the driven member in a direction opposite to that of its normal movement whereby the weight, at all times tends to move, and, during momentary stoppage of feed accompanied by shrinkage of objects within the setting chamber, does move said driven member in a direction opposite to that of the normal movement of said element and, through said power transmitting mechanism, moves the retard rolls in a direction opposite to that of their normal movement.

11. In a continuous gluing machine the combination with a heated glue setting chamber and power driven forcing rolls adapted to normally continuously forcibly feed a series of edge glue-coated objects into and through and out of said chamber, of means to maintain pressure between objects within said chamber, both during normal forward movement and during times when said forward movement momentarily stops and shrinkage of objects within the chamber occurs, said last named means comprising a member having a surface frictionally engaging objects as they emerge from said chamber and normally movable by said objects in the direction of travel of said objects, a weight and an operative connection between said weight and said member for transmitting force from said weight to said mem-

ber in a direction opposite to that of normal movement of said objects so that the weight at all times tends to actuate, and, during momentary stoppage of feed of said objects accompanied by shrinkage of the objects within the setting chamber, does actuate said member and move said surface in a direction opposite to that of normal movement of the emerging objects, and, by frictional engagement of said surface with the objects, does move them in a direction opposite to that of their normal movement.

12. In a gluing machine the combination of a heated glue setting chamber having an entrance and an outlet, continuously driven forcing rolls adjacent said entrance to force a series of glue coated objects into and through said chamber in a continuous movement, and means including a part engaging and continuously influenced to move by said objects as they emerge from said chamber outside of and closely adjacent said outlet and means associated with said part and continuously exerting a predetermined substantially uniform, yieldable resistance to said movement of said part, such that adjacent objects within said chamber are continually held in abutting contact with each other under a predetermined substantially uniform pressure while the glue is setting.

13. In a continuous gluing machine, as specified in claim 7, means to maintain pressure between objects in the chamber during temporary stoppage accompanied by shrinkage of said objects, said means including a weighted lever and torque transmitting mechanism between said lever and the friction driven member of said clutch whereby a torque, in a direction opposite to its normal movement, is impressed on said member and, through the portion of said chain of gearing between the clutch and retard rolls, on the retard rolls, and backward rotation of the rolls is caused when shrinkage reduces the forward pressure on the retard rolls.

14. In the gluing machine as defined in claim 12, the addition of means to feed successive objects to said forcing rolls, and automatic means including a part normally disposed in the path of movement of said objects from said feeding means to said forcing rolls for stopping said forcing rolls before the last-fed object completely emerges therefrom.

15. In the gluing machine as defined in claim 12, the addition of means to feed successive objects to the forcing rolls combined with means to insure stoppage of said forcing rolls before the last-fed object completely emerges therefrom, said last-named means comprising a movable arm normally projecting into the path of objects passing to said forcing rolls, and a starting device for said forcing rolls actuable into starting position by movement of said arm by an object moving toward said forcing rolls and normally in stopping position when no object is passing from said feeding means to said forcing rolls.

SELDEN H. HALL.