

March 31, 1931.

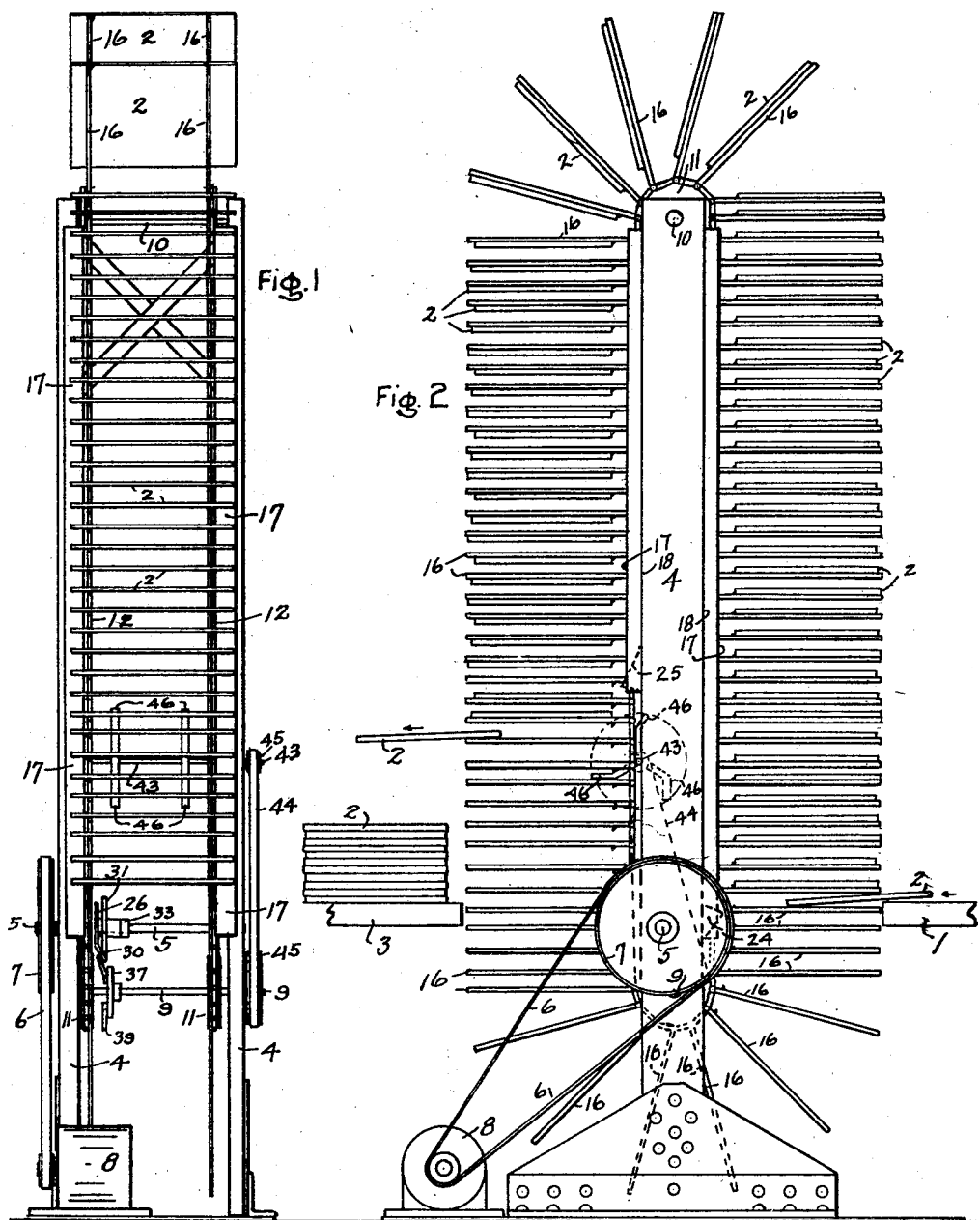
C. J. ROBERTS

1,799,135

AUTOMATIC GLUE DRYING RACK

Filed Oct. 30, 1928

3 Sheets-Sheet 1



Inventor

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By

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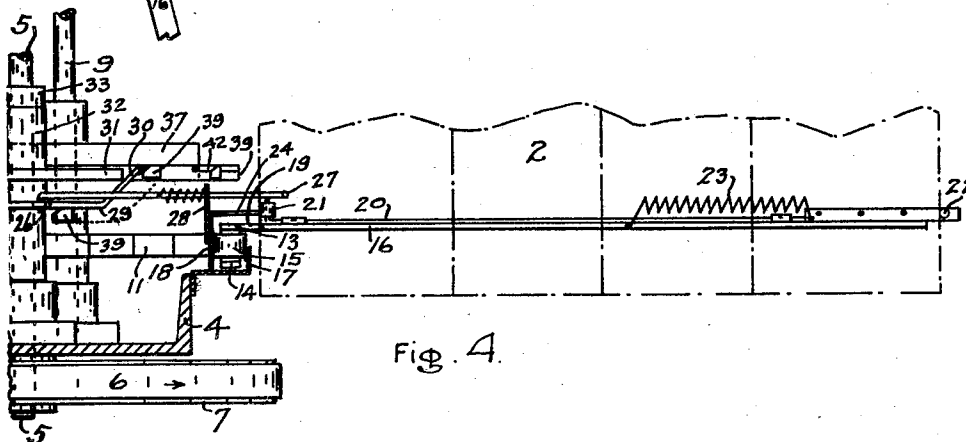
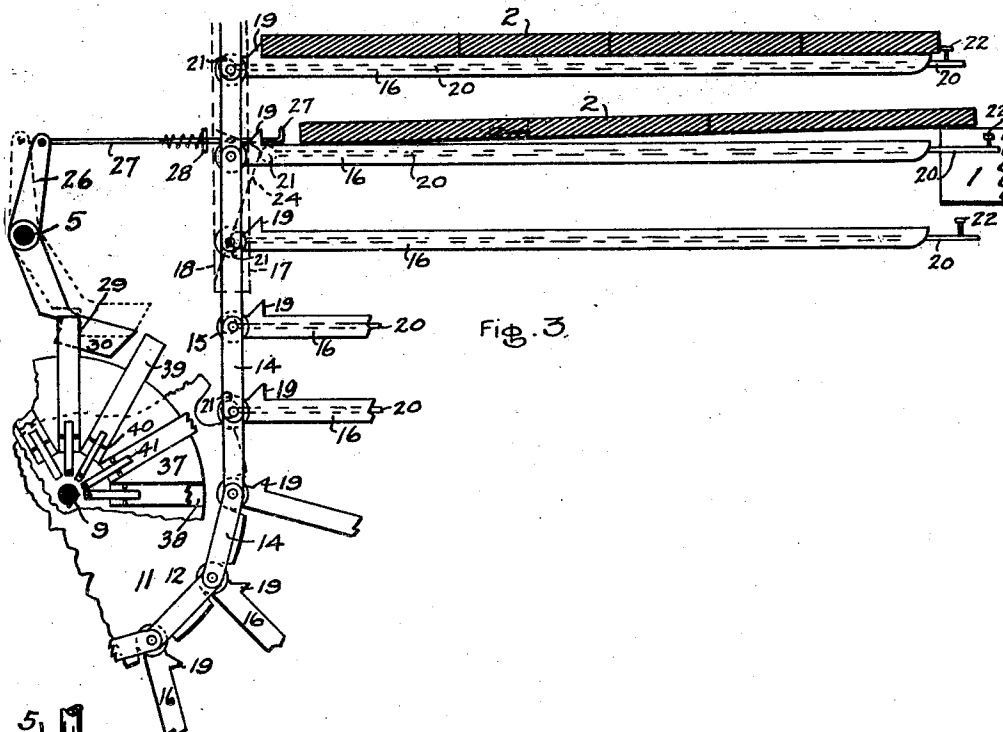
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3 Sheets-Sheet 3

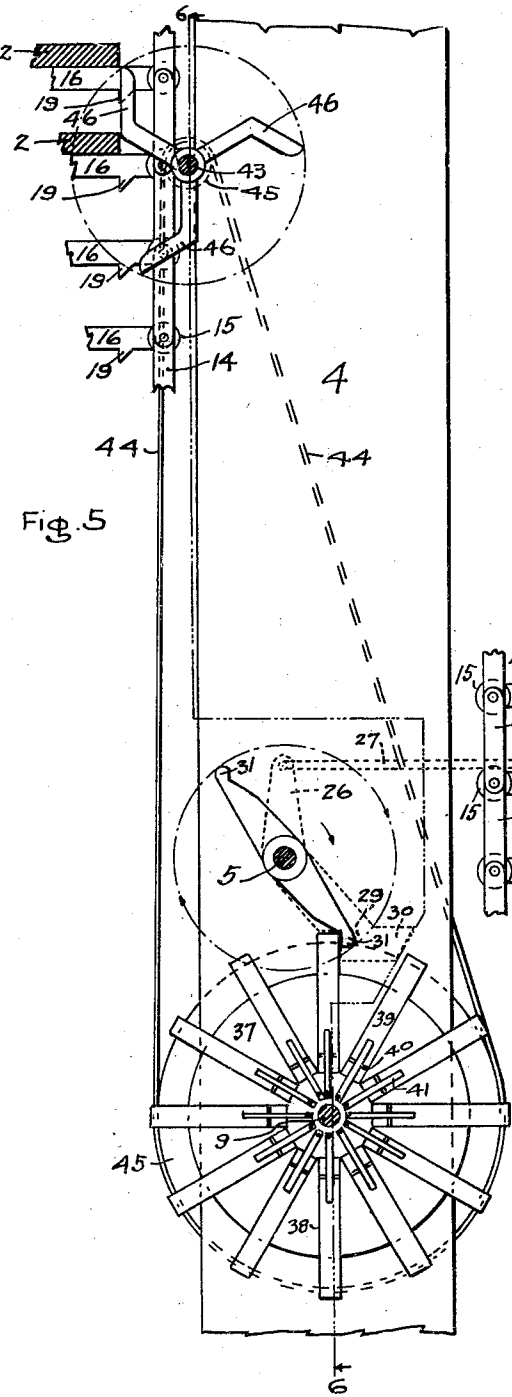


Fig. 5

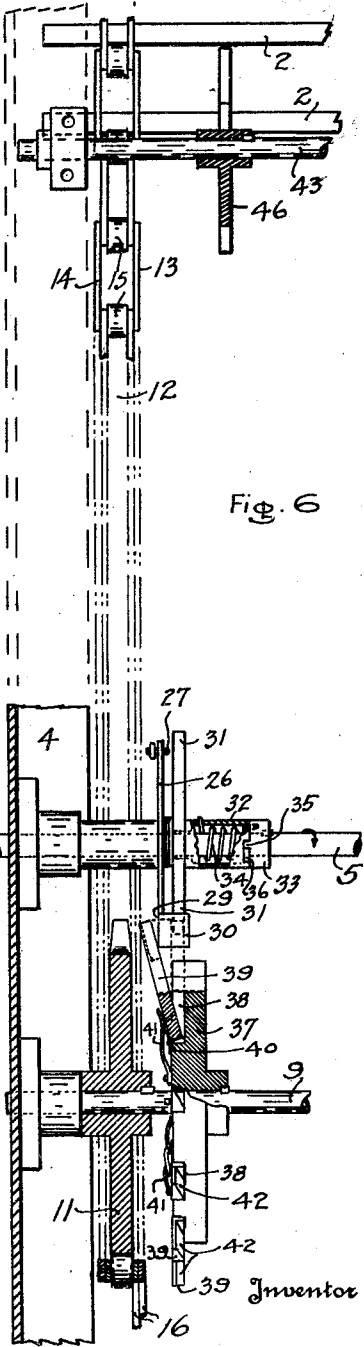


Fig. 6

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UNITED STATES PATENT OFFICE

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AUTOMATIC GLUE-DRYING RACK

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This invention relates to machines adapted to receive freshly glued pieces of wood and to secure them therein, under pressure, until a sufficient time has elapsed to permit the glue to dry enough to enable them to be handled. The objects of my invention are to provide such a machine, first, which is automatic in its action whereby the insertion of a freshly glued piece causes the carriers to move and also causes the piece which has been longest in the machine, to be ejected therefrom; second, which, though holding a large number of such glued pieces, occupies but little floor space in the factory; third, which automatically grips the freshly glued piece inserted therein and places it under pressure and removes it to make room for the next such piece; fourth, which automatically releases such piece from pressure as it approaches the end of its travel; and fifth, which automatically ejects such piece subsequent to its release from pressure.

Further objects of my invention are, first, to provide trigger means for automatically placing the driving mechanism in operative position when the freshly glued piece is inserted in the machine; second, to provide such a driving mechanism which will be inoperative except when such trigger mechanism has been actuated by the piece inserted in the machine; third, to provide suitable guide means for the carrier chains; fourth, to provide suitable clamping means on the carrier chains, whereby the piece is held under pressure; fifth, to provide suitable releasing means in connection with said guide means and adapted to open said clamping means to receive, or to release, the glued piece; sixth, to provide suitable means whereby the glued piece is supported in a position removed from the line of action of said clamping means before it is ejected; seventh, to provide suitable ejecting means adapted to remove the glued piece from the machine; and eighth, to provide a machine which is cheap to build, simple to operate, and effective in use.

I attain these and other objects by the devices, mechanisms, and arrangements illustrated in the accompanying drawings, in which—

Fig. 1 is a front elevation of my improved machine; Fig. 2 is a side elevation thereof; Fig. 3 is an elevation of a portion of the mechanism thereof showing the driving mechanism in inoperative position and showing a freshly glued piece being inserted; Fig. 4 is a plan view thereof; Fig. 5 is a view showing the parts as about to be operated; and Fig. 6 is a section on the line 6—6 in Fig. 5.

Similar numerals of reference refer to similar parts throughout the several views.

This machine is primarily intended for use in woodenware factories and especially in connection with making the bottoms of buckets and similar objects. Such bottoms are usually made by gluing together a plurality of pieces of wood into a rectangular board from which the circular bottom may be cut. This machine is adapted to receive such glued up boards and to retain them under pressure, as they are carried thereby, and to deposit them in a pile, which may be removed from time to time for the further operations in their manufacture.

The machine comprises a tall vertical frame having two parallel vertically moving chains mounted thereon, each chain having carrier arms extending horizontally therefrom at regular intervals and adapted to receive and carry the freshly glued board, together with means for intermittently operating said chains whenever a fresh board is placed thereon, and means to simultaneously eject the most advanced board therefrom.

The work table 1, at which the pieces are glued together to form a board 2, is at the front side of my improved machine, and the receiving table 3, on which they are piled as they are automatically ejected, is on the rear side thereof.

The frame of the machine comprises two vertical members 4, suitably braced and secured in position. The height of these members 4 depends on the height of the room in which they are used but should be about ten feet.

A power shaft 5 is suitably mounted across the machine between the members 4, said

shaft being driven by suitable means such as the belt 6 engaging the pulley 7 and operated by the motor 8.

A lower sprocket shaft 9 is mounted below, and to one side of, the said power shaft 5. A similar upper sprocket shaft 10 is mounted near the top of the frame members 4. Two sets of sprocket wheels 11 are mounted on the shafts 9 and 10 and are adapted to receive the two endless sprocket chains 12.

Each sprocket chain 12 is composed of special inside links 13 (Fig. 6) and suitable outside links 14, with rollers 15 between them. Each inside link 13 is provided with a long carrier arm 16 extending at right angles thereto and which may be made integral therewith. The sprocket wheels 11 are secured to their respective shafts 9 and 10 with their teeth in alignment, and therefore the two carrier arms 16 of corresponding links 13 of the two chains lie in the same horizontal plane and are adapted to receive the glued boards thereon. The length of the links 13 and 14 is such as to give a sufficient distance between successive arms 16 to permit the easy insertion of the board 2 between them.

Referring particularly to Fig. 4, it will be seen that the above-described chains 12 ride in vertical guide tracks secured to the frame members 4. Each guide track comprises an outer member 17 and an inner member 18 between which the rollers 15 pass. The weight of each board 2 tends to cause the chain to sag towards the frame and this action is opposed by the said guide track.

A lug or stop 19 is formed on the upper side of each arm 16, near the chain, and is adapted to be engaged by the end of the board 2 and to limit its inward motion on the arm 16. A clamp rod 20 is slidably mounted on the inner side of each arm 16 and is provided, at its inner end, with a roller 21, and at its outer end with a clamp pin 22 (which may be inserted in one of a number of different positions therein) and is drawn inward by means of a spring 23.

As seen in Fig. 3, the table 1 is above the level of the unfilled arm 16 and in such position that the board 2 may be slid thereon over the top of the said pin 22. A cam surface 24 is formed on the inner side of the guide track (shown in dotted lines in Fig. 3) and is engaged by the roller 21 to force the pin 22 out of clamping position against the action of the spring 23. This cam surface is positioned immediately below the level of the work table 1 and therefore, when a freshly glued board is inserted and drops on the arms 16, the pins 22 are out of engagement therewith until the rollers 21 slide down the upper ends of the cam surfaces 24, when the said pins 22 clamp the board 2 between them and the stops 19. The two front guide tracks extend from below the work table 1 to a

point adjacent to the shaft 10. A similar pair of rear guide tracks extend down the rear side of the frame members 4 from the shaft 10 to a point well above the receiving table 3.

The rear cam surface 25, formed on the rear track, is the reverse of the front cam 24, and operates similarly thereto, thus releasing the board 2 from the clamping action of the pin 22. But, as the chains pass over the upper sprocket wheels 11, the arms 16 are inverted and the boards 2 are therefore suspended below the arms, as seen in Fig. 2. Therefore when the clamp pins 22 are withdrawn by the rear cams 25, the said board 2 is dropped on to the arm 16 below it. This arm 16 has no stop or other projection on this side (Fig. 5), and therefore the said boards 2 are free to be ejected as soon as they have thus been released.

Referring now to Figs. 3 to 6, it will be seen that a latch lever 26 is loosely mounted on the shaft 5, or other suitable pivot, and is provided with an operating rod 27, extending therefrom through an arm 28 to a point adjacent to the stop 19, and is adapted to be engaged by the end of the freshly glued board 2, when it is inserted, to actuate the latch lever. When no board 2 is in place on the arm 16 the rod 27 is in its forward position and the latch is dropped to hold the spoke of the hereinafter described intermittent drive wheel out of the plane of the constantly rotating drive tooth, and therefore the chains are stationary. But as soon as the board 2 is inserted to engage the end of the rod 27, it raises the latch and permits the tooth to engage the spoke to move the chains the space of one link.

The latch lever 26 is provided, at its lower end, with a head 29, having a laterally bent tongue 30 extending laterally and forwardly therefrom and forming an inclined plane adapted to be engaged by each spoke of the hereinafter described intermittent drive wheel successively as the drive wheel is rotated, and thus to be removed thereby out of the plane of the driving tooth. The head 29 is shaped to hold the spoke in such removed position until the latch rod 27 is actuated by a board 2, when said head 29 is moved to permit the spoke to pass into the plane of the driving tooth. The latch rod 27 is constantly pressed outward and, as soon as the board 2 has been moved by the intermittent drive to release its end, it again occupies such advance position and the latch head 29 holds the next spoke from its operative position, until the next board 2 is inserted.

The power shaft 5 is constantly rotating and carries a drive tooth 31 mounted thereon and of any desired form. I prefer to insert a shock absorber between the tooth 31 and the shaft 5. This may consist of a hollow

barrel 32 (Fig. 6) on the tooth, loosely mounted on the shaft 5, a collar 33 secured to the shaft 5, a spring 34 secured to the collar 33 and to the barrel 32, and a lug 35 on the collar and engaging in a recess 36 in the barrel 32, whereby the tooth 31 is permitted a limited cushioned drag in relation to the rotation of the shaft 5.

tions, without departing from the idea of my invention, such, for instance, as substituting a fixed inclined plane, leading to the latch head, for the inclined tongue on the latch head, or changing the form of the chains, the shape of the latch, or the details of the intermittent drive wheel.

Having described my invention, what I claim is:—

1. In an automatic glue-drying rack, the combination of a driven sprocket shaft; two sprocket wheels secured thereon; a pair of complementary idler sprocket wheels mounted vertically above said first sprocket wheels; two vertical endless sprocket chains on said pairs of wheels; carrier arms on said chains and extending therefrom in corresponding positions; stops on said arms; spring-operated clamps on said arms and adapted to clamp a plurality of glued boards on said arms between said stops and said clamps, whereby the formed board is conveyed vertically upward and over said idler sprocket wheels and is inverted thereby to be suspended from said arms by said clamps; means for opening said clamps to permit the formed board to be dropped to the opposite unobstructed side of the next preceding arms; and ejecting means adapted to engage the released board and to remove it from the machine.

2. In an automatic glue-drying rack, the combination with a vertical frame; two complementary guide tracks secured thereto in vertical position, each guide track comprising an inner and an outer vertical rail; two similar endless conveying chains traveling in said guide tracks between the rails thereof; complementary arms extending from each said chain and adapted to receive a plurality of glued boards on their upper sides; stops formed on said arms, to engage the inner edge of the first board inserted in the machine; spring-operated clamping means adapted to engage the outer edge of the last board and to press the boards together and press the said inner edge thereof against said stops; and inclined surfaces adapted to engage said clamping means to open them from clamping position, against the action of their springs, said guide tracks cooperating with said inclined surfaces to hold the arms while said clamping means are being operated.

3. In an automatic glue-drying rack, the combination of a constantly rotating drive shaft; a drive tooth mounted thereon; a conveyer chain adapted to intermittently receive glued boards at a predetermined point; a driving wheel; transversely movable spokes mounted on said driving wheel and normally lying in the path of rotation of said drive tooth; an inclined plane adapted to engage the spoke about to reach the position to be engaged by said tooth, to remove it from the path of said tooth; a latch adapted to hold

It is therefore evident that my machine acts intermittently; that as soon as a freshly glued board is inserted, all the boards previously received are advanced one position and the furthest advanced board is ejected; and that while the boards are in the machine they are under clamping pressure.

It is also evident that many changes can be made in the machine and its arrangement, as may be suggested by the conditions under which it is to be operated. The machine can also be combined with a conveyer by which it may be automatically fed, in which case its intermittent motion may be modified; also a conveyer may be substituted for the receiving table.

The machine illustrated is one form of my invention and is designed for the particular conditions in a factory and many changes in the details may be made to suit other condi-

1. In an automatic glue-drying rack, the combination of a driven sprocket shaft; two sprocket wheels secured thereon; a pair of complementary idler sprocket wheels mounted vertically above said first sprocket wheels; two vertical endless sprocket chains on said pairs of wheels; carrier arms on said chains and extending therefrom in corresponding positions; stops on said arms; spring-operated clamps on said arms and adapted to clamp a plurality of glued boards on said arms between said stops and said clamps, whereby the formed board is conveyed vertically upward and over said idler sprocket wheels and is inverted thereby to be suspended from said arms by said clamps; means for opening said clamps to permit the formed board to be dropped to the opposite unobstructed side of the next preceding arms; and ejecting means adapted to engage the released board and to remove it from the machine.

2. In an automatic glue-drying rack, the combination with a vertical frame; two complementary guide tracks secured thereto in vertical position, each guide track comprising an inner and an outer vertical rail; two similar endless conveying chains traveling in said guide tracks between the rails thereof; complementary arms extending from each said chain and adapted to receive a plurality of glued boards on their upper sides; stops formed on said arms, to engage the inner edge of the first board inserted in the machine; spring-operated clamping means adapted to engage the outer edge of the last board and to press the boards together and press the said inner edge thereof against said stops; and inclined surfaces adapted to engage said clamping means to open them from clamping position, against the action of their springs, said guide tracks cooperating with said inclined surfaces to hold the arms while said clamping means are being operated.

3. In an automatic glue-drying rack, the combination of a constantly rotating drive shaft; a drive tooth mounted thereon; a conveyer chain adapted to intermittently receive glued boards at a predetermined point; a driving wheel; transversely movable spokes mounted on said driving wheel and normally lying in the path of rotation of said drive tooth; an inclined plane adapted to engage the spoke about to reach the position to be engaged by said tooth, to remove it from the path of said tooth; a latch adapted to hold

the said offset spoke and to be actuated; by the freshly glued board being placed in the machine, to withdraw from said spoke and thereby to permit said spoke to return to normal position; and a sprocket wheel actuated by
5 said driving wheel and actuating said conveyer chain.

4. In an automatic glue-drying rack, the combination of a rotating shaft; a driving
10 tooth loosely mounted on said rotating shaft; shock-absorbing means interposed between said shaft and said tooth; conveying means adapted to intermittently receive glued boards thereon at a predetermined point; and
15 means adapted to intermittently connect said tooth to said conveying means, the shock of such connection being absorbed by said shock-absorbing means.

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