G. E. TOMLINSON.

AUTOMATIC JOINTER.

APPLICATION FILED JULY 12, 1915.

1,174,777.

Patented Mar. 7, 1916.

4 SHEETS—SHEET 1.

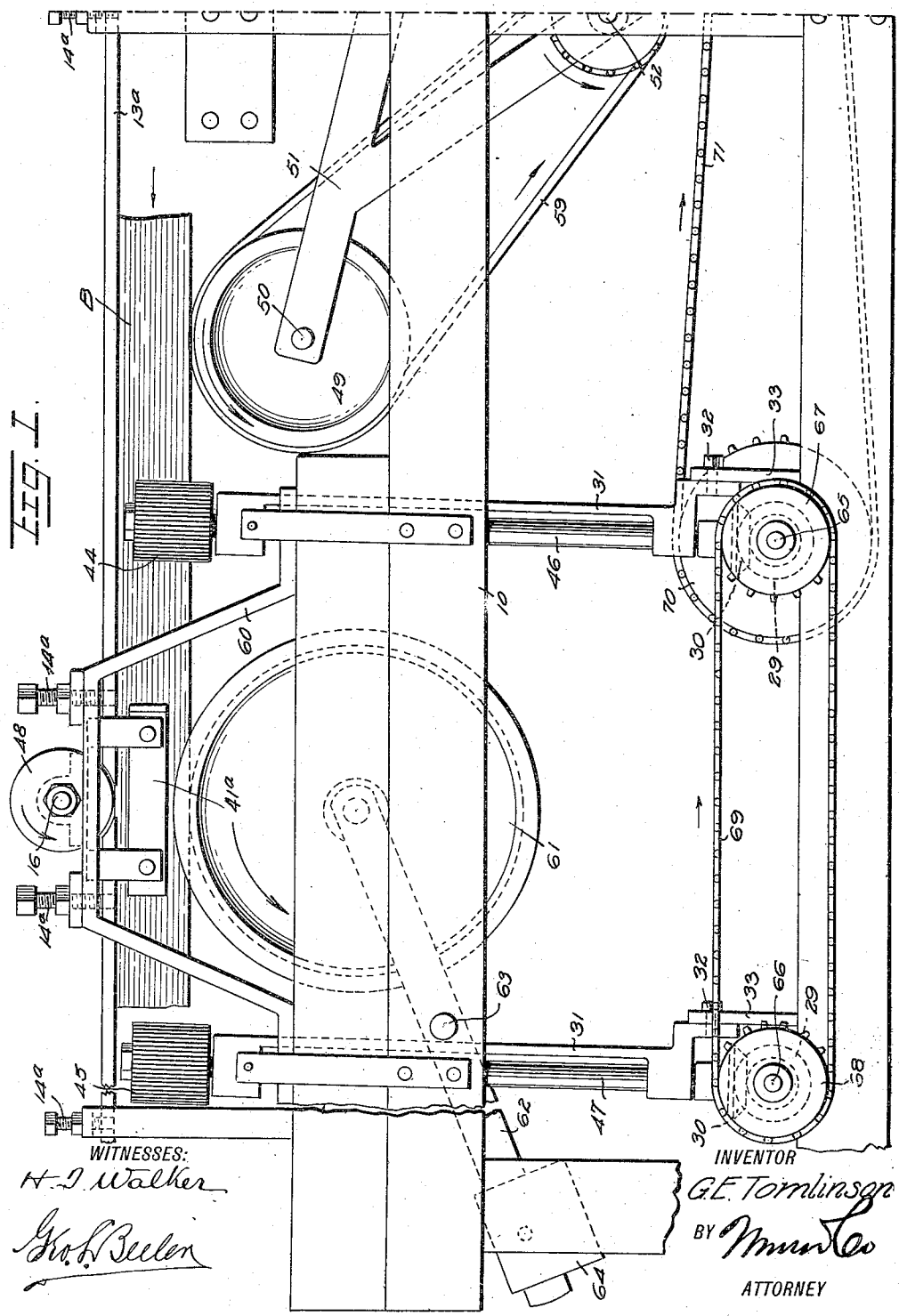


FIG. 1.

WITNESSES:

H. J. Walker

Geo. L. Beeler

INVENTOR

G. E. Tomlinson

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4 SHEETS—SHEET 2.

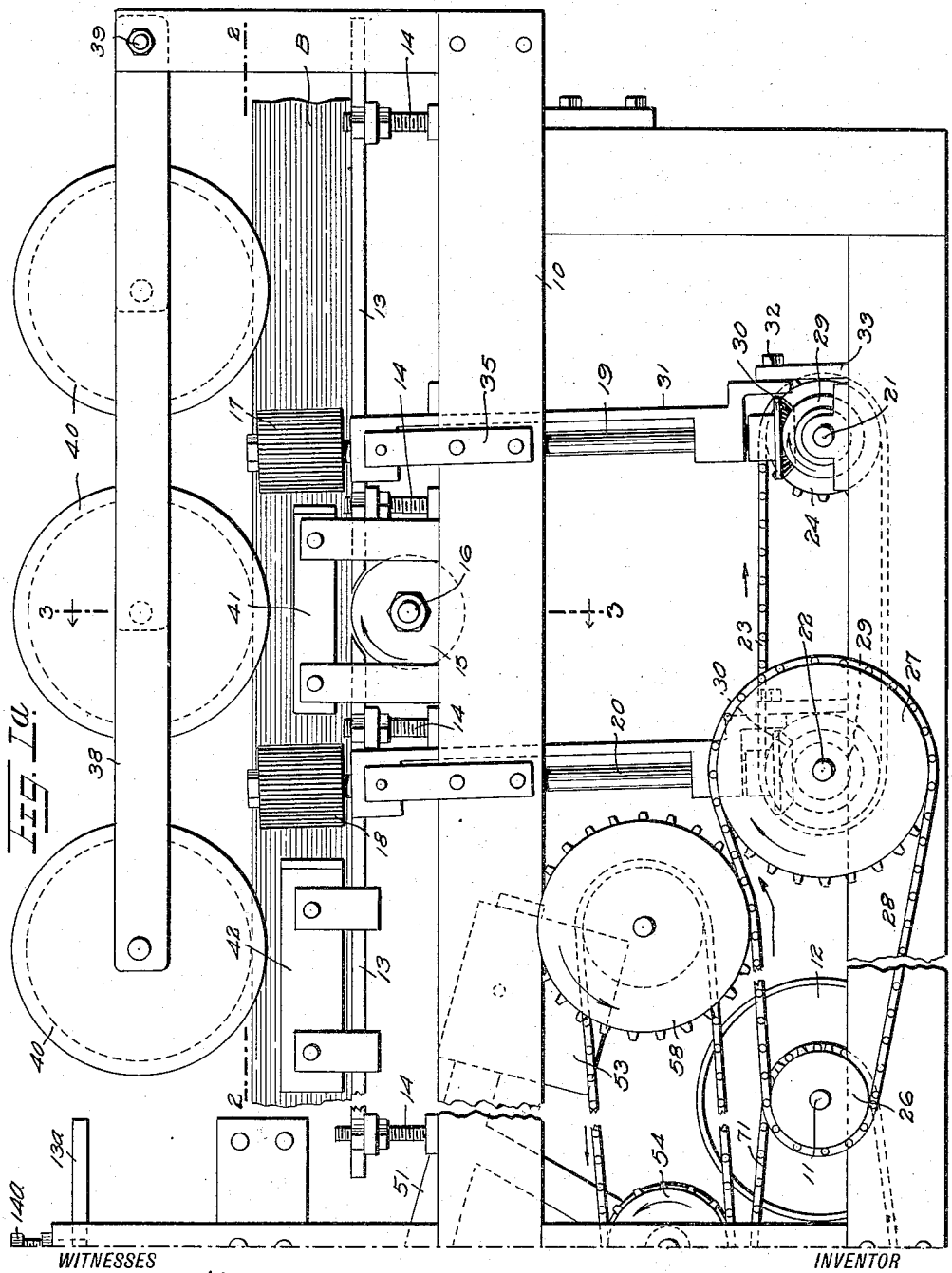


Fig. IV.

WITNESSES

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4 SHEETS—SHEET 3.

Fig. 2.

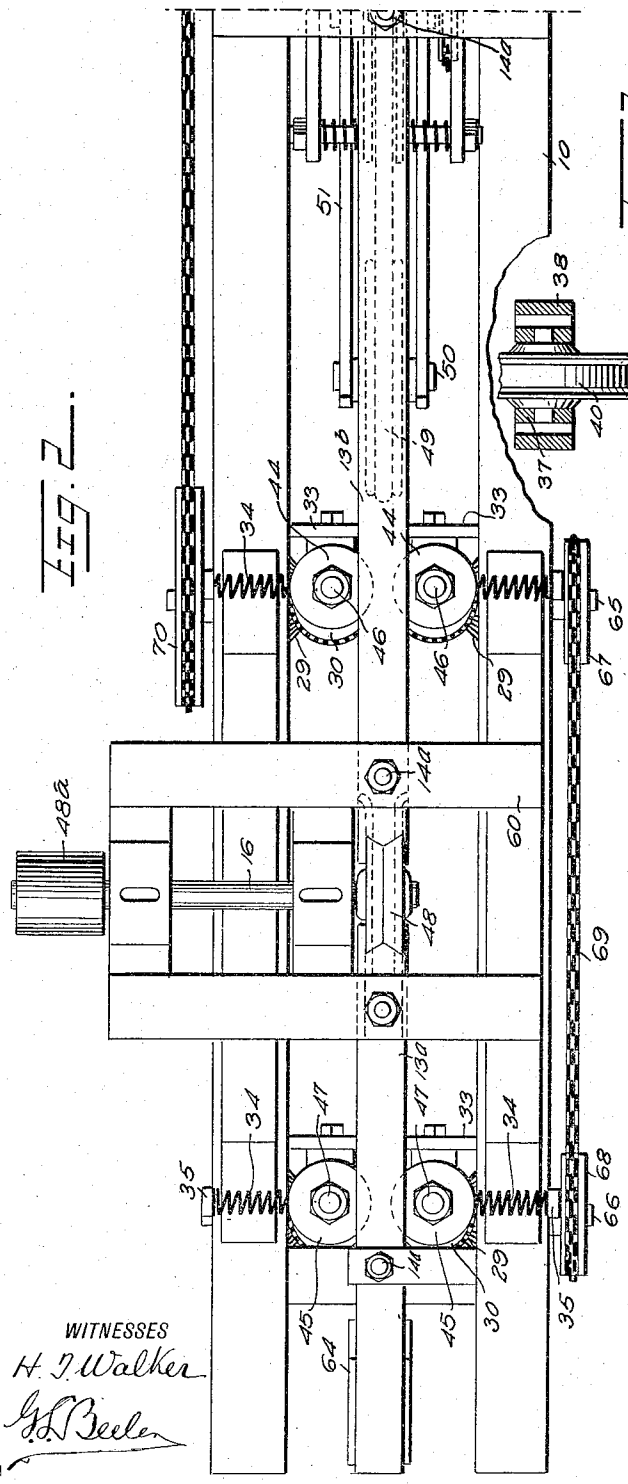
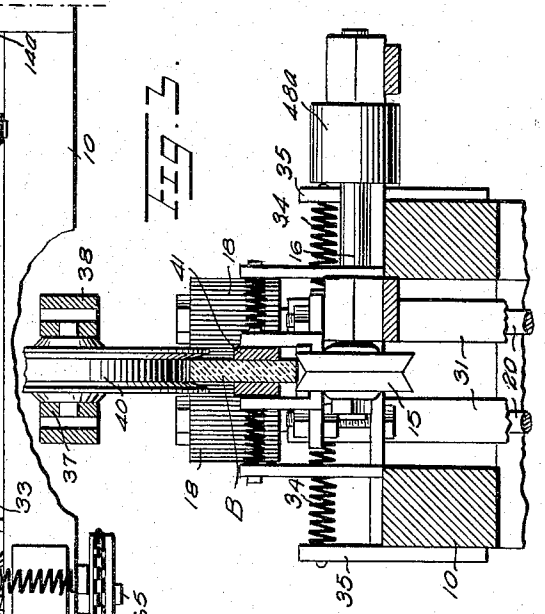


Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 2a.

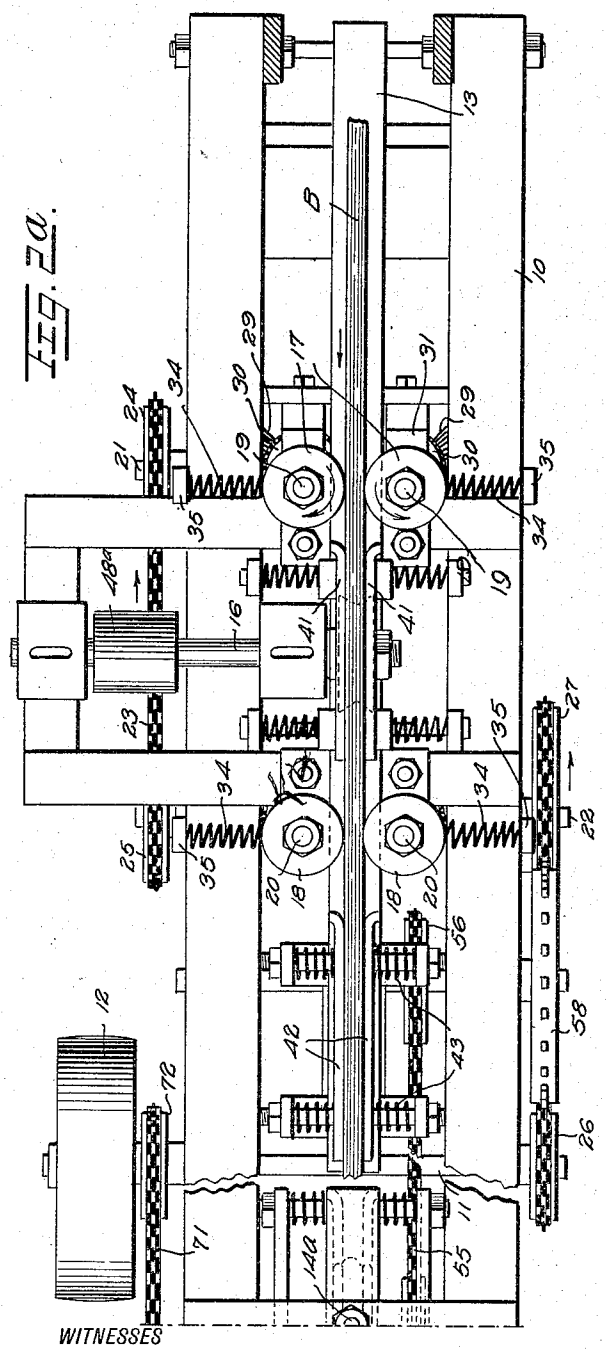
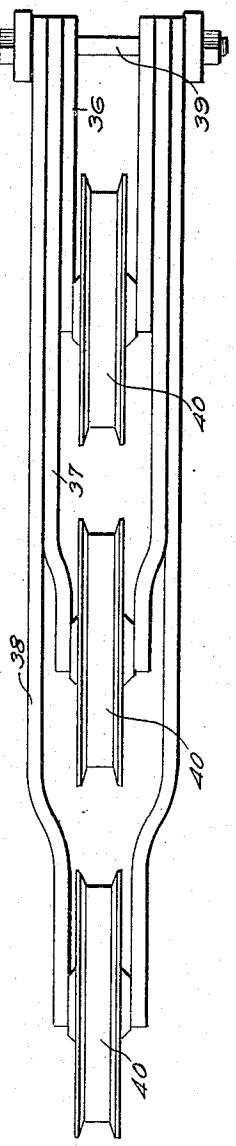


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE EDWARD TOMLINSON, OF WINCHESTER, KENTUCKY.

AUTOMATIC JOINTER.

1,174,777. Specification of Letters Patent. Patented Mar. 7, 1916.

Application filed July 12, 1915. Serial No. 39,321.

To all whom it may concern:

Be it known that I, GEORGE E. TOMLINSON, a citizen of the United States, and a resident of Winchester, in the county of Clark and State of Kentucky, have invented a new and Improved Automatic Jointer, of which the following is a full, clear, and exact description.

This invention relates to woodworking machinery and has particular reference to edge trimmers or jointers.

Among the objects of the invention is to provide a machine for jointing the edges of staves for barrels or hogsheads so as to joint both edges of pieces or strips of lumber of random width automatically or in a continuous operation.

With the foregoing and other objects in view, the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figures 1 and 1ª considered together constitute a side elevation of a preferred embodiment of the invention; Figs. 2 and 2ª considered together are a plan view, partly in section on the line 2—2 of Fig. 1ª; Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 1ª; and Fig. 4 is a plan view of the pressure rollers at the front end of the machine.

Referring more particularly to the drawings, I show at 10 any suitable form or design of framework adapted to be supported for the purposes of the invention. Along the bottom of the frame and not far from the center is journaled a transverse power shaft 11 to which is secured a driving pulley 12 typifying any suitable power means for operating the entire machine.

Adjacent the front of the machine is a work table or supporting plate 13 adjustably supported upon standards 14 whereby the active upper surface of the table may be inclined or tilted in any direction. Such table, however, is substantially horizontal and has its longitudinal axis parallel to the main axis of the entire machine. The table 13 is divided at its middle portion and a cutter head 15 mounted upon the horizontal axis 16 extends upwardly between the two parts of the table so as to joint the lower edge of the stock B passing through the machine.

Any suitable number of feed rolls may be used in connection with the machine, the same being preferably arranged in pairs on opposite sides of the line of movement of the stock. As indicated I employ two pairs of rolls 17 and 18, the same being mounted upon shafts 19 and 20 respectively. The shafts are substantially vertical but are inclined rearwardly at their upper ends slightly so as to cause the action of the feed rolls to hold the stock downwardly upon the cutter head. The rolls may be actuated in any suitable manner, but the means I show for this purpose includes a pair of transverse shafts 21 and 22 journaled upon the bottom of the frame parallel to each other and connected by a sprocket chain 23 running over sprocket wheels 24 and 25 respectively. The shaft 22 is driven from the power shaft 11 by means of sprocket gears 26 and 27, and a sprocket chain 28 between them. The shaft 21, therefore, is driven from the shaft 22 and at the same speed as well as in the same direction. Connected to the shaft 21 are bevel gears 29 facing toward each other and between which and meshing with the respective gears are corresponding bevel gears 30 secured to the lower ends of the roll shafts 19 whereby the rolls are driven simultaneously at the same speed but in opposite directions; that is to say, one of the rolls is turned toward the right and the other toward the left but with their active faces acting upon the stock B to move it rearwardly through the machine. The shaft 22 carries bevel gears 29 which coöperate with similar gears 30 connected to the lower ends of the shafts 20 for a similar purpose to that already described in connection with the rolls 17, whereby the rolls 18 are driven so as to coöperate with the rolls 17 to cause the stock B to be continued in its course.

The feed roll shafts 19 and 20 are all adapted to move slightly toward and from the line of movement of the stock so as to adapt the space between each pair of rolls to the thickness of the stock passing therethrough. To this end, therefore, each roll shaft is journaled in a bracket 31 pivoted on a substantially horizontal pivot 32 at the lower end upon a standard 33, the axis of the pivot being substantially parallel to the lon-

gitudinal axis of the machine. The upper end of each bracket 31 is acted upon resiliently by means of a tension spring 34 whose outer end bears against a plate 35 secured rigidly to the frame. The tension springs 34 serve, therefore, to cause the rolls of each pair to approach each other so as to engage any piece of lumber passing between them but allowing the rolls to separate far enough to accommodate a piece of stock of the greatest thickness.

A gravity pressure device comprising a series of frames 36, 37 and 38 is pivoted upon a pivot rod 39 at the front end of the frame, all of the frames being mounted thus coaxially on the same pivot. These several frames carry a series of rollers 40 preferably of flanged construction which coöperate with the upper edge of the stock as it passes thereunder and thereby the stock is held down for coöperation with the cutter head 15 in connection with the downwardly drawing action of the feed rolls 17 and 18.

The stock is held in its movement along the machine from lateral displacement or vibration by any suitable number of adjustable guide shoes 41 and 42. These guide shoes may be spring pressed as shown at 43, and by the adjustment thereof the stock may be caused to be inclined laterally for beveling the lower edge thereof.

After the stock is jointed along its lower edge and passed beyond the shoes 42, it passes between other feed rolls 44 and 45 arranged in pairs as before described and secured to the upper ends of shafts 46 and 47 respectively, but which shafts are inclined slightly forwardly at their upper ends so as to cause the feeding action of these rolls to tend to lift the stock so as to hold it upwardly against an overhead cutter head 48 for jointing the upper edge thereof. While the stock is passing between the front and rear portions of the machine, it is lifted by what I term a transfer roll 49 journaled on a horizontal axis 50 upon a rocking frame 51 pivoted at 52 upon the main frame. At the front end the frame 51 is provided with an adjustable counterbalance 53 tending to hold the transfer roll 49 elevated, but permitting it to be lowered according to the width of the stock passing through the machine. A drive wheel 54 is connected to the shaft 52 and is connected by a sprocket chain 55 to a sprocket wheel 56 mounted on the same shaft 57 as a sprocket wheel 58 which meshes with the aforesaid sprocket chain 28 between the wheels 26 and 27. The transfer roll 49 is therefore positively rotated from the first mentioned power device through the sprocket gearing just described and a belt 59 leading upwardly and rearwardly from the shaft 52.

The feed rolls 44 and 45 have their shafts journaled in brackets 31 pivoted at 32 upon standards 33 substantially the same as those described in connection with the front end of the machine, and the upper ends of the brackets 31 are pressed resiliently toward each other by springs 34 pressing against plates 35. Also guide shoes 41ª are employed on opposite sides of the stock as it passes along the rear portion of the machine. The second cutter head is journaled upon an upwardly projecting frame 60 and adjacent the same in the front and rear thereof are arranged the two parts of a guide plate or table 13ª secured by adjusting devices 14ª whereby the parts of the plate or table may be either tilted longitudinally or laterally with respect to the cutter head and to each other. It will be noted that by virtue of the adjusting devices 14 and 14ª of the several guide plates or tables, either cutter head may coöperate in an angle formed between the two parts of either table so as to taper the stock B as well as to provide the necessary bevel. In other words, by adjusting the table 13 so that the rear portion thereof is inclined upwardly at an angle to the front portion, the cutter head will dress off more of the edge of the stick at its ends than at its middle portion, and by a corresponding adjustment of the two parts of the table 13ª, the upper edge of the stock may be similarly treated so that the stop will taper from its middle toward both ends, the amount of taper depending upon the amount of angularity arranged between the two parts of each table.

In addition to the tendency of the feed rolls 44 and 45 to feed and hold the stock upwardly against the second cutter head due to the inclination of the shafts 46 and 47, I provide a pressure roll 61 mounted upon a frame 62 and pivoted at 63, the same acting upwardly upon the stock just beneath the cutter head 48. This pressure roll 61 is acted upon by a counterbalance 64 adjustable along the frame 62.

The shafts 46 and 47 of the second series of feed rolls are driven preferably by miter gears 29 and 30 similar to those already described at the front end of the machine. The gears 29 are secured in this instance to horizontal transverse shafts 65 and 66 having sprocket wheels 67 and 68 thereon connected by a sprocket chain 69. The shaft 65 also has a drive sprocket wheel 70 over which a sprocket chain 71 operates from a sprocket wheel 72 mounted upon the primary motor shaft 11.

The cutter heads 48 may be of any suitable design as to surface configuration and may be driven at a high rate of speed from any suitable source of power transmitted thereto through their shaft 16 and pulleys 48ª. By making the sprocket wheel 70 of smaller diameter than the wheel 27, while other associated parts of the two ends of the machine

are of the same proportions, the feed rolls 44 and 45 are caused to operate at a higher rate of speed than the first set of feed rolls, with the result that the stock is caused to pass along the second cutter head more rapidly than over the first cutter head, and all possibility of obstruction or interference between the several pieces of stock will be eliminated.

I claim:—

1. In an automatic jointer, the combination of a cutter head, means to operate the same around a horizontal axis at high speed, a rigid guide table adjacent the cutter head, means to guide stock along the table and in contact with the cutter head and cause the same to move thereover positively, and a pressure device comprising a plurality of frames pivoted on a single axis parallel to the axis of the cutter head and a plurality of rolls journaled and operated by gravity in the respective frames.

2. In an automatic jointer, the combination of a frame, a pair of cutter heads journaled transversely at the front and rear portions of the frame in different horizontal planes, means to guide a piece of stock edgewise over the first cutter head for jointing the lower edge thereof, a vertical transfer roll for lifting the stock after being jointed on its lower edge thereby causing the stock to be brought into position to be jointed along its upper edge by the second cutter head, and a rocking counterweighted frame supporting the transfer roll.

GEORGE EDWARD TOMLINSON.

Witnesses:
WALLER BEAN,
GEO. HOW.

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