E. W. ROBINSON.

STAVE JOINTING MACHINE.

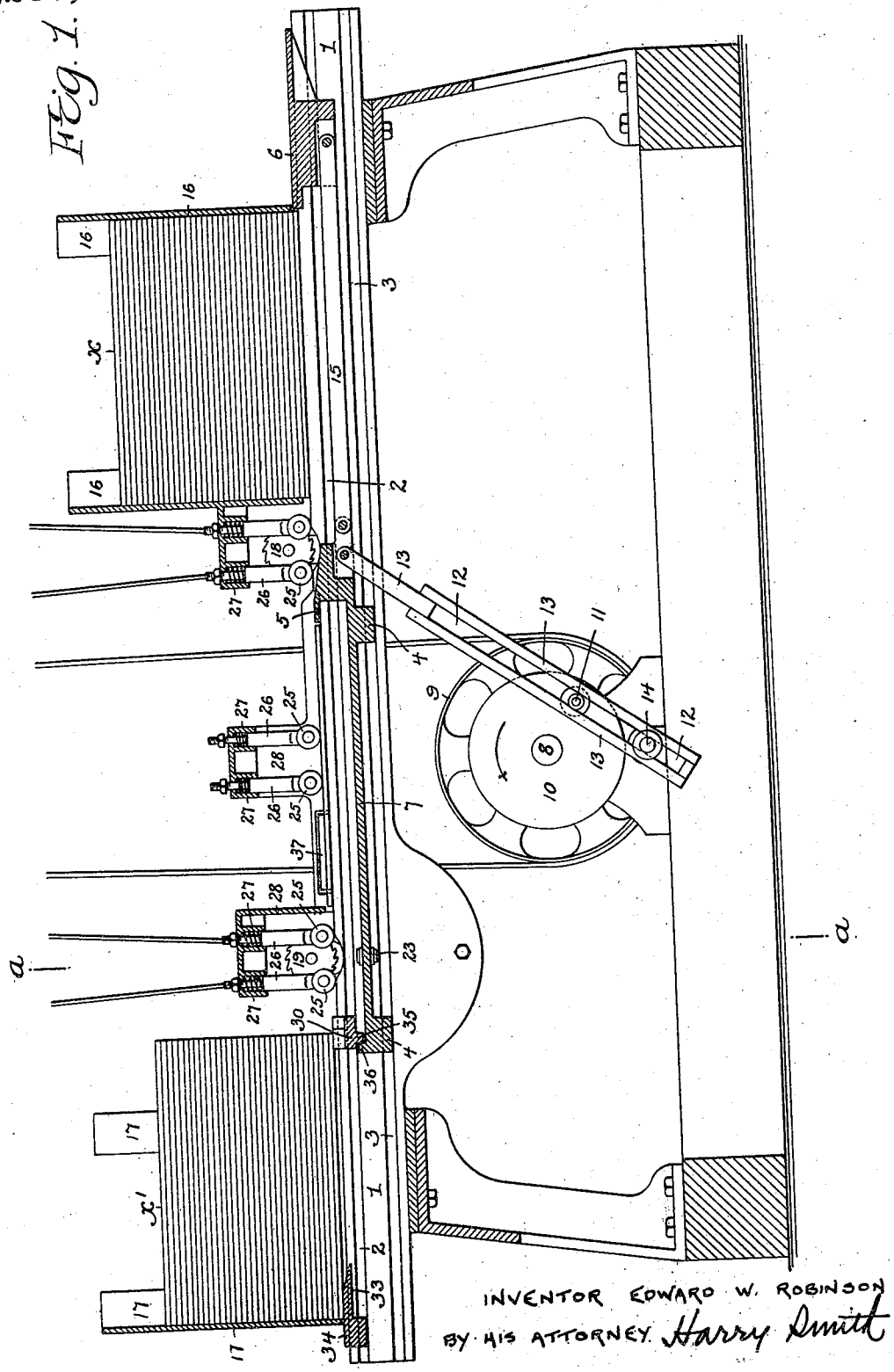
APPLICATION FILED OCT. 25, 1915.

Patented Aug. 14, 1917.

3 SHEETS—SHEET 1.

1,237,098.

Fig. 1.



INVENTOR EDWARD W. ROBINSON

BY HIS ATTORNEY Harry Smith

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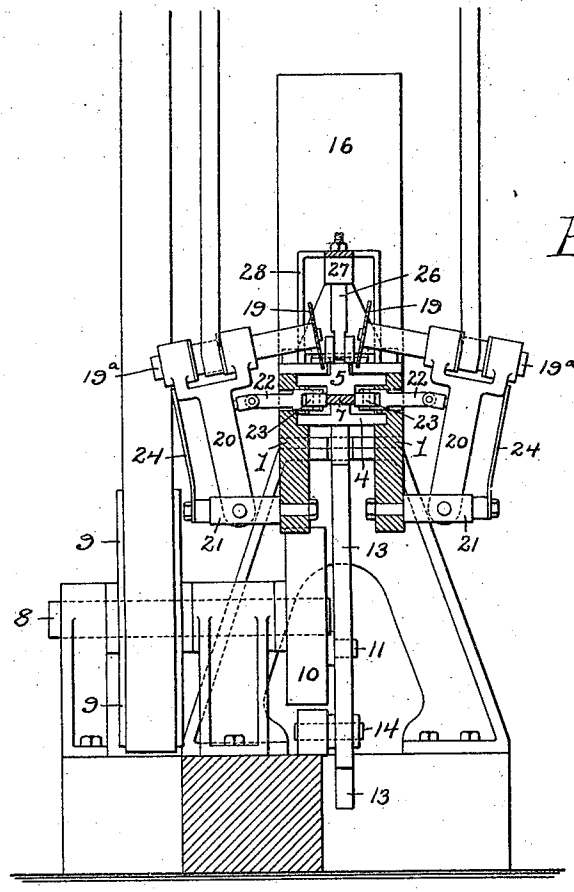
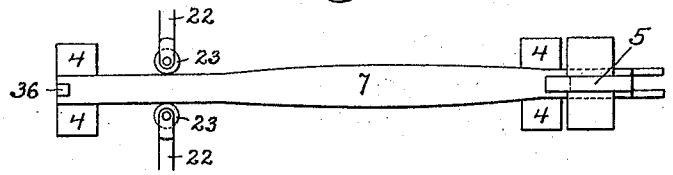


Fig. 2.

Fig. 3.



INVENTOR
EDWARD W. ROBINSON
BY HIS ATTORNEY
Harry Dimick

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3 SHEETS—SHEET 3.

Fig. 4.

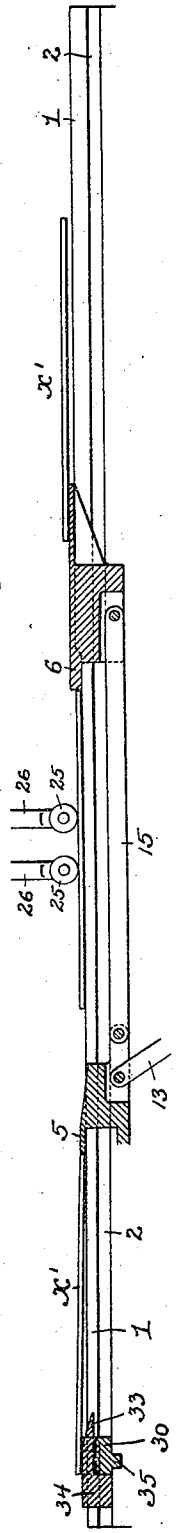


Fig. 8.

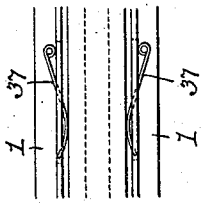


Fig. 6.

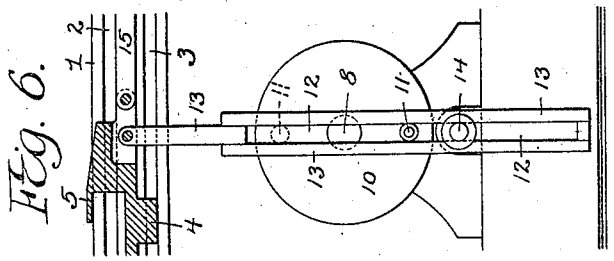


Fig. 5.

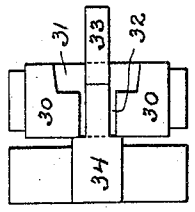
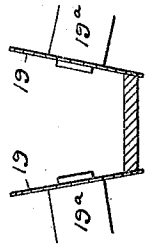


Fig. 7.



INVENTOR

EDWARD W. ROBINSON

BY HIS ATTORNEY

Harry Smith

UNITED STATES PATENT OFFICE.

EDWARD W. ROBINSON, OF SAVANNAH, GEORGIA.

STAVE-JOINTING MACHINE.

1,237,098. Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed October 25, 1915. Serial No. 57,699.

To all whom it may concern:

Be it known that I, EDWARD W. ROBINSON, a citizen of the United States, residing in Savannah, Georgia, have invented certain Improvements in Stave-Jointing Machines, of which the following is a specification.

The object of my invention is to provide a stave jointing machine of simple construction and low cost but quick and accurate in operation and requiring no attention beyond the supplying of the piles of stave blanks and the removal of the piles of finished staves.

This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which—

Figure 1 is a longitudinal section of a stave jointing machine constructed in accordance with my invention;

Fig. 2 is a transverse section on the line *a*—*a*, Fig. 1;

Fig. 3 is a plan view of a templet and pusher head constituting one of the elements of the machine;

Fig. 4 is a longitudinal sectional view of the stave feeding devices of the machine in the other extreme position from that represented in Fig. 1;

Fig. 5 is a plan view, on a larger scale, of certain features of said mechanism in the position shown in Fig. 4;

Fig. 6 is a side elevation of the stave feeder actuating device in a position intermediate of its opposite extreme positions;

Fig. 7 is a sectional view, on enlarged scale, of the stave, illustrating the action of the jointing saws thereon, and

Fig. 8 is a plan view illustrating certain centering devices for acting upon the stave during its forward travel.

The bed plate of the machine comprises opposite side members 1—1, which have in their inner faces upper and lower longitudinal guideways 2 and 3, as shown in Fig. 1. These guideways serve to direct, in their longitudinal reciprocating movements, a pair of slides 4 and a pair of pusher heads 5 and 6, the slides 4 carrying a longitudinal templet 7 which consists of a simple flat plate with its opposite sides curved, as shown in Fig. 3, to accord with the desired curvature of the sides of the staves which are to be jointed.

Mounted so as to be free to turn in suitable bearings on the base of the machine is a shaft 8 having a pulley 9 for receiving a driving belt and a disk 10 with crank pin 11 thereon, said crank pin engaging a slot 12 in a lever 13, whose fulcrum pin 14 also engages the slot 12, the upper end of the lever being pivotally connected to the pusher head 5. The pusher heads 5 and 6 are connected by means of a link 15, as shown in Fig. 1.

Suitably mounted on the side members 1 of the bed plate of the machine are hoppers 16 and 17, the former for receiving a stack of stave blanks *x* and the hopper 17 for receiving a stack of jointed staves *x'*, and between these two hoppers are two pairs of cutters of any appropriate character, which in the drawing I have shown as pairs of saws 18 and 19, the saws 18 being carried by horizontal arbors adapted to fixed bearings on the side members of the bed plate but the saws 19 being carried by inclined arbors 19^a mounted in bearings in laterally movable carriers, which, in the drawing, I have shown as swinging arms 20, pivotally mounted at their lower ends in brackets 21 and carrying near their upper ends inwardly projecting pivoted links 22 whose inner ends are provided with anti-friction rollers 23 adapted to bear upon the opposite sides of the templet 7, as shown in Fig. 3, suitable springs 24, carried by the brackets 21, pressing against the upper ends of the swinging arms 20, as shown in Fig. 2, so as to move the same inwardly and maintain the anti-fraction rollers 23 constantly in contact with the opposite faces of said templet.

At suitable points throughout the length of the machine are presser rollers 25 mounted so as to be free to rotate at the lower ends of plungers 26, the latter being vertically guided in boxes 27 mounted upon or forming part of arches 28 which are supported upon the opposite side members 1 of the bed plate and bridge the space between the two, as shown in Fig. 2.

Mounted so as to be free to slide in the upper guideway 2 is a guiding head 30 which, as shown in Fig. 5, has in its rear face a recess 31 for the reception of the forward end of the stave and in its upper face a recess 32 which, when the guiding head 30 is at the forward limit of its movement, receives the rear end of a beveled finger 33, secured to and projecting from a block 34, which is rigidly mounted upon the side members 1

of the bed plate at the forward end of the stave hopper 17. Depending from the guiding head 30 is a toe 35 and at the forward end of the templet 7 is an upwardly projecting toe 36 adapted to contact with said toe 35 on the rearward movement of said templet, as shown in Fig. 1.

Supposing that the rear hopper 16 is supplied with stave blanks, as shown in Fig. 1, the first forward movement of the pusher head 6 drives the bottom stave of the pile forwardly between the saws 18 which trim the edges of the same and reduce it to a uniform width throughout. When at the limit of its forward movement, as shown in Fig. 4, the pusher head 6 still projects beneath the lowermost stave blank x and on its backward movement travels beneath the same until it reaches its rearmost position shown in Fig. 1, whereupon the bottom stave drops in front of the pusher head preparatory to being pushed from beneath the pile on the next forward movement of said pusher head.

The pusher head 6 delivers the stave blank in front of the pusher head 5, which, on its forward movement, pushes the stave blank between the saws 19 whereby the opposite sides of the blank are beveled and at the same time receive the desired curved contour owing to the lateral movement of the inclined saws 19 due to the influence of the templet 7 upon the swinging frames 20 which carry the arbors of said saws.

When the forward end of the stave reaches the guiding head 30 it enters the recess 31 therein and said head then partakes of the further forward movement of the stave, and serves to retain it in its proper central position during such movement, which continues until the parts reach the position shown in Fig. 4, at which time the beveled finger 33 has entered beneath the forward end of the stave and lifted the same above the top of the guide 30, whereby, on its backward movement, said guide will travel beneath the stave and lift the same to the position shown in Fig. 1.

The backward movement of the pusher heads 5 and 6 is much quicker than the forward or feeding movement of the same, owing to the fact that the backward swinging movement of the lever 13 is effected when the crank pin 11 is traveling closer to the fulcrum of the lever than when it is imparting the forward swing to said lever 13, as illustrated, respectively, by full and dotted lines in Fig. 6. By this means waste of time is prevented and the capacity of the machine materially increased as compared with a machine having a pusher head which travels at the same rate of speed in both directions.

The side members 1 of the bed plate carry opposite spring pressers 37 (Fig. 8) which bear upon the opposite sides of the stave and aid in guiding the same during its forward movement. In order that the upper end of the swinging lever 13 may be permitted to travel in a horizontal course the slot 12 in said lever is continued to receive the fulcrum pin 14 so that the lever can slide on said fulcrum pin as it swings from one extreme position to the other.

While I prefer, in most cases, to provide the machine with two pairs of cutters 18 and 19 and two feeding heads 5 and 6, so as to reduce the row of blanks to uniform width throughout before feeding them to the jointing cutters 19, the extra pair of cutters 18 and the extra feeding head 6 may be dispensed with when the blanks, as delivered to the machine, are of reasonably uniform width, the feed hopper 16 in this case being located immediately in the rear of the cutters 19.

I claim:

1. In combination with cutting instrumentalities, a feeding device comprising a support for the blank, a pusher head for moving said blank forwardly, and a reciprocating guide for receiving the forward end of the blank after it has passed the cutting instrumentalities and retaining the same in proper central position during its further forward movement.

2. In combination with cutting instrumentalities, a feeding device comprising a support for the blank, means for pushing the blank forwardly past the cutting instrumentalities, a guide for engaging the forward end of the blank after it has passed said cutting instrumentalities, said guide moving forwardly with the blank, and a finger for raising the forward end of the blank free from the guide as it approaches the termination of its forward movement.

3. In combination with cutting instrumentalities, a feeding device comprising a support for the blank, means for pushing the blank forwardly past the cutting instrumentalities, a guide engaging the forward end of the blank after it has passed said cutting instrumentalities, said guide moving forwardly with the blank, a finger for raising the forward end of the blank free from the guide as it approaches the termination of its forward movement, and means for causing the guide to travel beneath the blank back to its original position.

4. In combination with cutting instrumentalities, a feeding device comprising a support for the blank, means for pushing said blank forwardly past the cutting instrumentalities, a sliding guide for receiving the forward end of the blank after it has passed the cutting mechanism, and engaging members on said pusher and slide for causing backward movement of the latter.

5. In combination with cutting instru-

mentalities, a feeding device comprising a support for the blank, a pusher head for moving said blank forwardly past the cutting instrumentalities, guides for directing said pusher head in a straight line, a lever pivotally connected to said pusher head, a fulcrum pin for said lever, and a crank pin for imparting swinging movement to the lever, said lever having therein a longitudinal slot which receives both the fulcrum pin and the crank pin.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD W. ROBINSON.

Witnesses:

KATE A. BEADLE,

HAMILTON D. TURNER.

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