

J. R. THOMAS & P. A. SOLEM.  
JOINTING MACHINE.

APPLICATION FILED APR. 13, 1908.

Patented Feb. 16, 1909.

4 SHEETS—SHEET 1.

912,918.

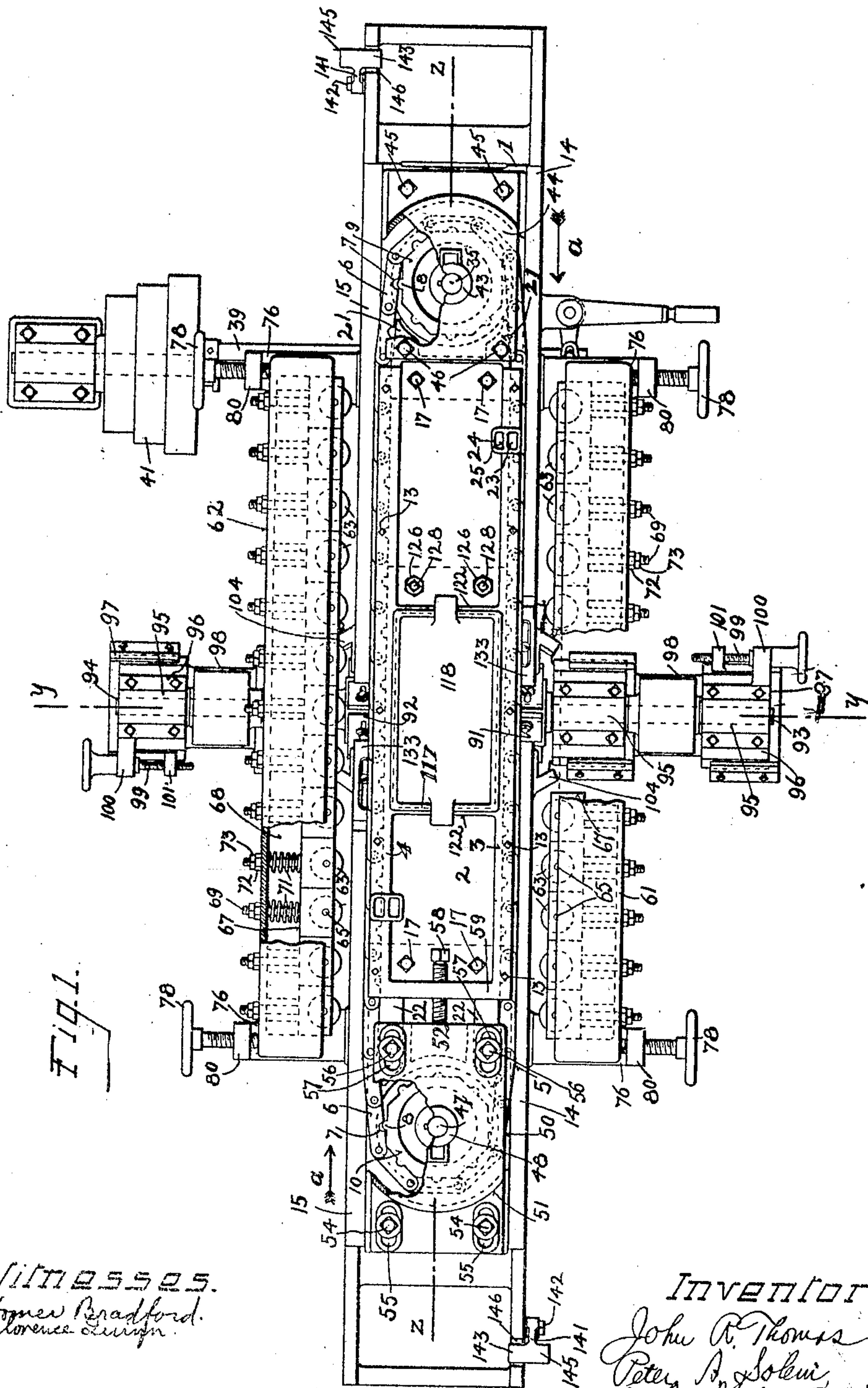


Fig. 1.

Witnesses.  
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Florence C. C. C.

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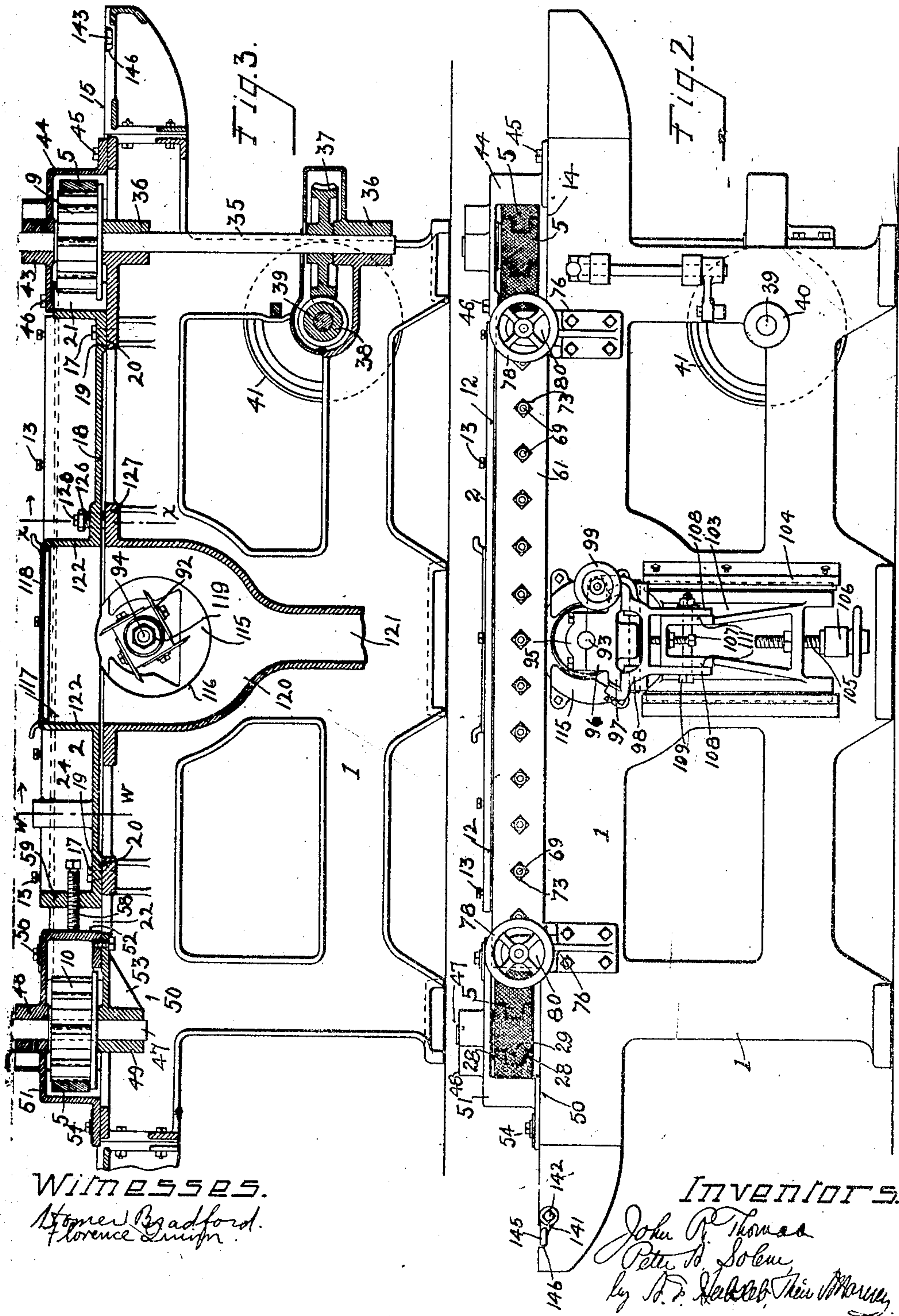
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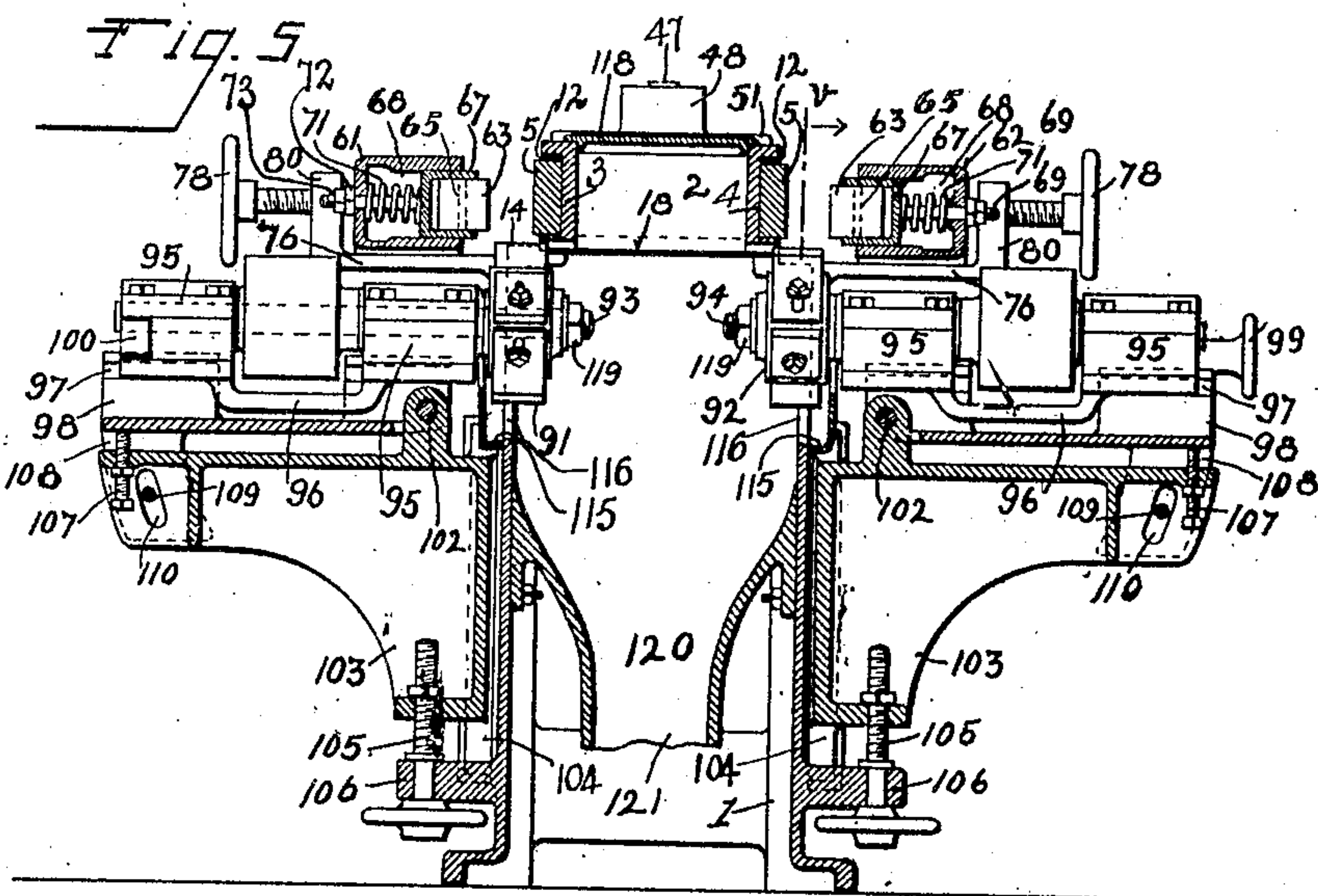
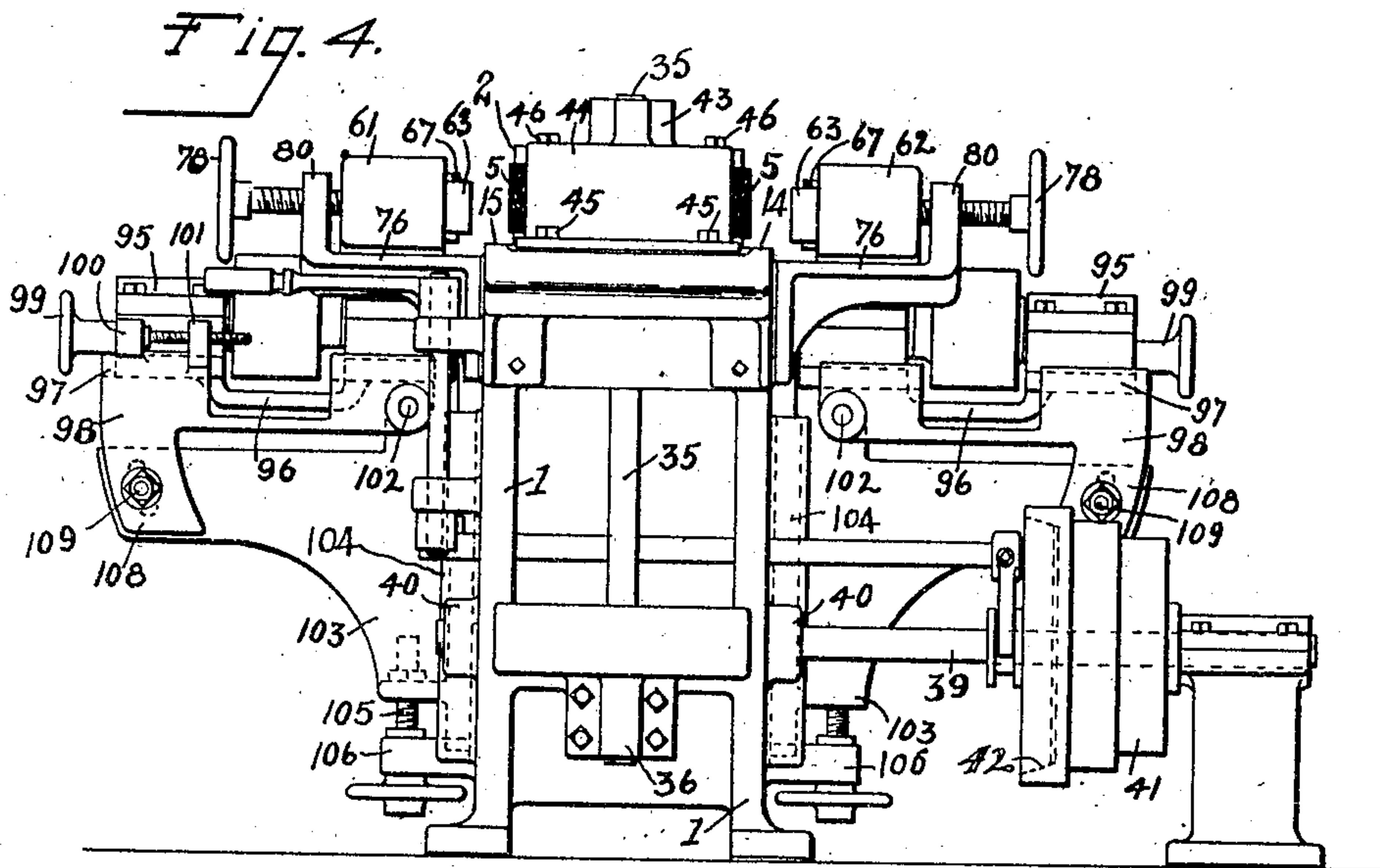
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4 SHEETS—SHEET 3.



WITNESSES.  
Homer Bradford.  
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INVENTORS.  
John R. Thomas,  
Peter A. Solem  
by A. S. Haskins  
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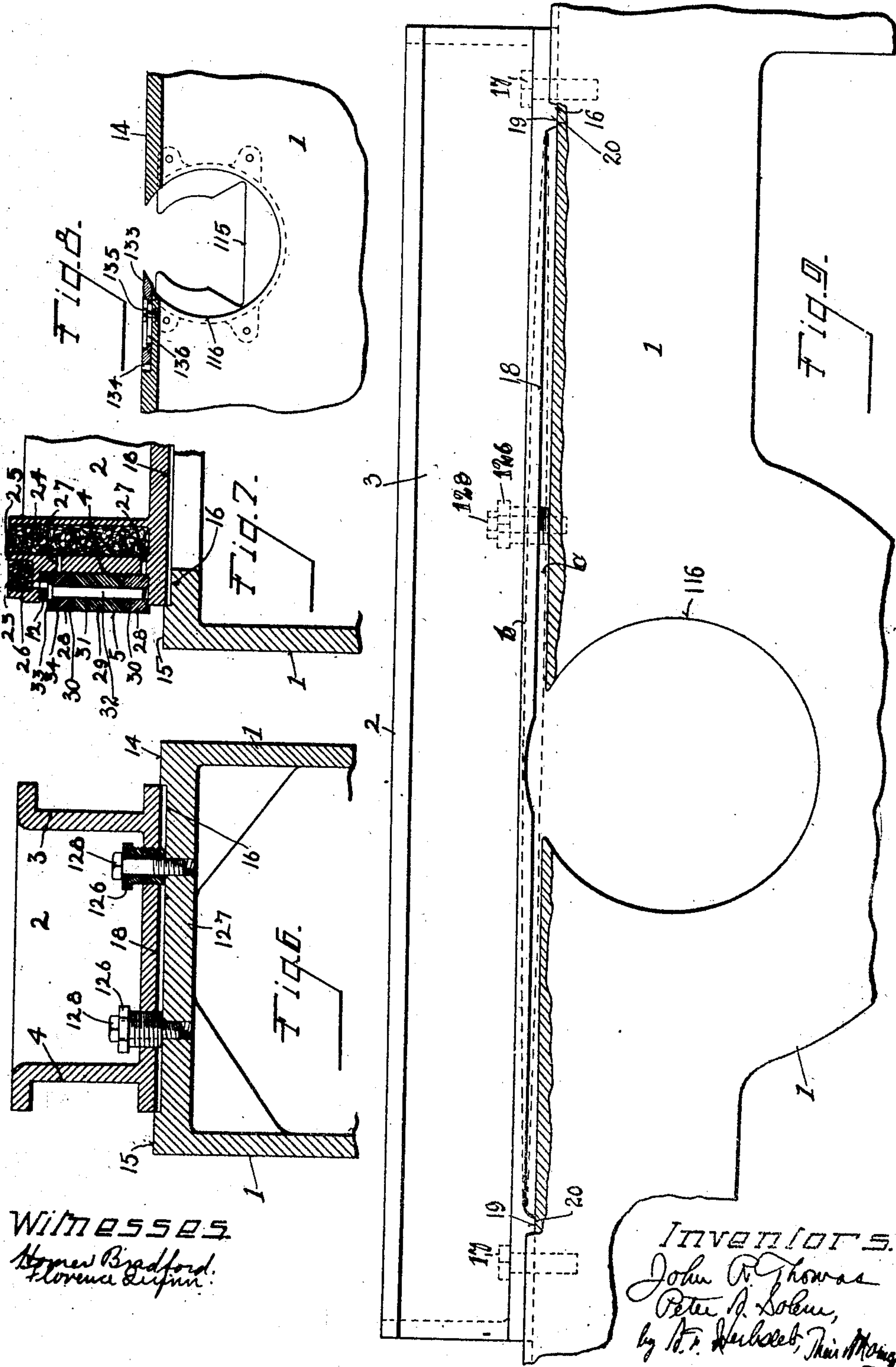
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4 SHEETS—SHEET 4.

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# UNITED STATES PATENT OFFICE.

JOHN R. THOMAS AND PETER A. SOLEM, OF CINCINNATI, OHIO, ASSIGNORS TO J. A. FAY & EGAN COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF WEST VIRGINIA.

## JOINTING-MACHINE.

No. 912,918.

Specification of Letters Patent.

Patented Feb. 16, 1909.

Application filed April 13, 1908. Serial No. 426,905.

*To all whom it may concern:*

Be it known that we, JOHN R. THOMAS and PETER A. SOLEM, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have jointly invented certain new and useful Improvements in Jointing-Machines, of which the following is a specification.

Our invention relates principally to so-called glue jointers in which the edges of boards are provided with joints for gluing purposes.

In making glue joints it is often desirable to make either round joints or hollow joints, the round joints being joints in which the jointed face is slightly convexed lengthwise of the edge of the board, the hollow joints being joints in which the jointed face is slightly concaved lengthwise of the edge of the board, and we accomplish this in novel manner in our improved device.

The invention will be readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a plan view of our improved device, broken away in parts for better illustration. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal section of the same on the line  $z-z$  of Fig. 1. Fig. 4 is an end elevation of our improved device. Fig. 5 is a vertical cross-section of the same on the line  $y-y$  of Fig. 1. Fig. 6 is an enlarged detail in section on the line  $x-x$  of Fig. 3, showing the means for bending the chain-guide frame out of parallel with the tables. Fig. 7 is an enlarged detail in section on the line  $w-w$  of Fig. 3 showing the construction of the feeding-chain and its oiling means. Fig. 8 is a detail in section on the line  $v$  of Fig. 5; and Fig. 9 is a diagrammatic representation of the springing of the chain-guide frame out of parallel with the tables, shown exaggerated.

1 represents a main frame on which a chain-guide frame 2 is stationarily secured, the latter having chain-guideways 3 4 extending longitudinally along its side edges in which a feed-chain 5 is adapted to travel. The feed-chain comprises links 6 having recesses 7 at their inner faces into which the teeth 8 of wheels 9 10 engage for feeding the chain, the wheel 9 being shown as the feed-wheel and the wheel 10 being an idler-wheel, the feed-chain being stretched in two feeding stretches at the respective sides of said

chain-guide frame, these feeding stretches traveling in opposite directions as shown by the arrows  $a$ . The feeding-faces of said links are preferably each provided with a ribbed or knurled surface for making contact with the side of the board. The chain-guideways are provided with gibs 12 adjustable by bolts 13.

The main frame is provided with tables 14 15 at its respective sides, the chain-guide frame being located between said tables, the upper face of the main frame being preferably provided with a recess 16 between said tables for receiving and positioning said guide-way frame laterally. The chain-guide frame is stationarily secured at each end to the main frame, as by having bolts 17 pass therethrough into the main frame. The bottom of the chain-guide frame is provided throughout its length between its ends with a recess 18, thereby spacing the chain-guide frame from the main frame throughout its length except at its ends, where resting-faces 19 on the chain-guide frame contact and are clamped upon resting-faces 20 on the main frame.

The tables on the main frame and the chain-guideways in the chain-guide frame, as well as the resting-faces 19 20, are first carefully planed into relatively true parallel lines so that the normal positions of the chain guideways are parallel with the tables. The chain-guide frame is however capable of being sprung into continuous rounding form up or down with relation to the tables in manner and for purposes hereinafter described. The chain-guide frame is provided with longitudinal extensions 21 22 at its respective ends.

Oil-cups 23 24 separated by the web 25 are provided in the chain-guide frame at the beginning of each guideway, which communicate respectively with the chain by means of an aperture 26 at the top of the guide-way and apertures 27 at the inner face of said guide-way. Each of the chain-links has separated ears 28 at one end and an intermediate ear 29 at its other end provided respectively with pivot-pin holes 30 31 which register at the ends of adjoining ears for the reception of a pin 32 having a head 33 received in a recess 34 at the upper end of the apertures, these pins being merely dropped into the apertures and resting loosely therein so that any of the pins along



the chain may be readily removed for separating the chain or giving attention to the links at any point, the pins passing under the oil apertures 26.

5 The feed-wheel 9 is on an upright shaft 35 journaled in bearings 36 on the frame and having a worm-wheel 37 thereon which is meshed by a worm 38 on a cross-shaft 39 journaled in bearings 40 on the frame and  
10 operated by suitable means as by a cone-pulley 41 through a clutch 42. The shaft 35 is journaled at its upper end in a bearing 43 of a housing 44 secured to the main frame by means of bolts 45 at its outer end and  
15 having the extensions 21 of the chain-guide frame 2 received between its inner end and the main frame, bolts 46 passing through said inner end into said extensions for rigidly securing said end to the frame.

20 The idler-wheel 10 is mounted on an upright shaft 47 which is journaled in bearings 48 49 of a slide 50, the slide comprising a housing 51 in which the idler-wheel rotates, the housing having a depending leg 52 received between the extensions 22, to which  
25 leg the lower bracket 53, on which the bearing 49 is located, is bolted, the housing being secured directly to the frame at its outer end by bolts 54 passing into the frame  
30 through slots 55 and at its inner end by bolts 56 passing through slots 57 into the extensions 22 of the chain-guide frame. For adjusting the tension on the feed-chain a bolt 58 is provided which passes through a  
35 threaded aperture in the rib 59 of the chain-guide frame and contacts said housing. After adjustment of tension the housing is bolted in place by means of the bolts 54 56.

61 62 are pressure-bars at the respective  
40 sides of the machine, each of which carries a series of pressure-rollers 63. Each of the pressure-rollers is preferably mounted on a shaft 65 journaled in a yoke 67, these yokes being received side by side in a longitudinal  
45 recess 68 of the pressure-bar. These yokes have sliding contact with each other at their sides and are guided vertically by the upper and lower walls of said recess 68. A threaded stem 69 is secured to each of the yokes and  
50 passes through an aperture in the outer side wall of the pressure-bar in which it has sliding movement, a spring 71 being interposed between the pressure-bar and the yoke for normally urging the pressure-roll inward,  
55 nuts 72 73 limiting this inward movement. The pressure-bars are mounted at their ends on brackets 76 secured to the frame and are slidable toward and from the chain-guide frame on these brackets by means of positioning screws 78 threaded in lugs 80 of said  
60 brackets and held against endwise movement in said pressure-bars.

Cutter-heads 91 92 rotate in vertical planes between the respective stretches of  
65 the feed-chain and the pressure-bars and are

respectively mounted on shafts 93 94 separated from each other and respectively journaled in bearings 95 of a slide 96 slidable longitudinally in guide-ways 97 of a saddle 98 and adjustable longitudinally by means  
70 of a screw-rod 99 journaled in a lug 100 on said slide and threaded into a lug 101 on said saddle. We have also provided means for adjusting said cutter-heads up and down, and in certain classes of work it is desirable  
75 to adjust the cutter-heads at an angle to their normal horizontal rotary axes, and for obtaining the best results we have provided pivots for the cutter-head saddles closely adjacent to said cutter-heads and we accomplish the adjustment by mounting each  
80 saddle on a pivot 102 at the inner end of said saddle closely adjacent the cutter-head thereon, the pivot receiving support on a slide 103 adjustable up and down on the  
85 frame in a slide-way 104 by means of a threaded rod 105 journaled in a lug 106 on the main frame and threaded into said slide. The outer end of said saddle receives support from a bolt 107 threaded into the slide 103.  
90 Lugs 108 depend from said saddles and are located at the respective sides of said slide, a clamping rod 109 passing through apertures in said lugs and through slots 110 in said slide for clamping said lugs against clamping-  
95 faces 111 of said slide.

A plate 115 is bolted to each side of the frame for obstructing the opening 116 in said side at the cutter-head position. The chain-guide frame is provided with an upper opening 117 arranged to be closed by a cover 118.  
100 The cutter-heads are arranged to receive attention through said opening and may be removed from their spindles inwardly by manipulation by the clamp-nuts 119, the inner  
105 ends of the cutter-head shafts being preferably separated so that the heads may be readily slipped on and off the same from the inner ends of said shafts. Below the opening 116 the frame is provided with a shaving-chute 120, so that the shavings from both  
110 heads may be received by the one chute which is common to both heads and removed therefrom through the opening 121 at its bottom. The chain-guide way frame is preferably provided with the cross-ribs 122 at said  
115 opening 117.

As hereinbefore stated the chain-guideway frame is rigidly secured to the main frame at the ends of said chain-guideway frame, the  
120 guideways therein being parallel with the tables, the full length of said chain-guide frame being spaced from the main frame except at its ends, thus spacing it from the main frame throughout its length intermediate of its  
125 ends. Our object in doing this is to permit us to spring the chain-guide frame independently at either side thereof upwardly or downwardly out of true horizontal plane or straight line so as to give the chain-guideway  
130



at either side of said guideway frame a slight upward or downward rounding to cause the stretch of the chain to follow a slightly upwardly or downwardly curved course lengthwise of the board, and we accomplish this by providing a hollow bolt 126 at each side of said chain-guide frame intermediate of its ends, shown adjacent its middle, threaded into said chain-guide frame at said point. The bottom of this bolt is arranged to contact the cross-web 127 of the main frame, a bolt 128 passing through each of said hollow bolts and threaded into said cross-web. The chain-guideway frame is of slighter construction than the main frame, causing the springing to take place in the guideway frame, as shown exaggerated at *b* and *c* in Fig. 9. If now it is desired to give the chain-guideway at either side an upward rounding, the hollow bolt at that side is screwed downwardly against the main frame until the chain-guideway has been given its proper bend or curve, and the interior bolt is then clamped tightly in place for holding the parts in position. If it is desired to give said chain-guideway a downward rounding, the hollow bolt is screwed in the reverse direction and the intermediate bolt used to clamp said side of the chain-guideway downwardly until the inner end of the hollow bolt strikes the main frame, the hollow bolt being adjusted for properly positioning this inward bend. In this manner we provide convenient and simple means whereby the edge of the board may be given a slightly inward depression for forming what may be termed a hollow joint or a slight outward rounding for forming what may be termed a rounding joint, that is, the joint may be either slightly convex or concave lengthwise of the board for forming a most desirable glue joint, practice having demonstrated that it is desirable to give a glue joint either a slight concavity or a slight convexity lengthwise of the board in preference to a straight line. In practice this rounding in either direction is but slight, and as an exemplification, it may be stated that an adjustment of the bolts 126 128 of 1/16 of an inch, for raising or lowering the chain-guideway at the bolt position 1/32 of an inch out of level with its ends, which may be instanced at about 4 feet apart, will accomplish our purposes. In this manner the chain-guideway is rounded out of a true straight line for causing the stretch of the chain to follow a similar course. The resultant of feeding the board through the machine over the cutter-head with its side against the chain following this course is that its edge is provided with a convexed or concaved joint, depending on the direction, down or up, in which the guide has been sprung.

At the feeding-in end of said respective tables a chip-breaker 133 is provided for

each of the cutter-heads, this chip-breaker being sunk to the level of the table-top in a recess 134 and adjustable toward and from the cutter-head and held in adjusted position by a counter-sunk screw 135 passing through a slot 136 in the chip-breaker.

In making some glue-joints the board will be supported only on the feeding-in end of the table, sufficient of the edge of the board being cut away to raise its edge above the level of the table after the joint has been cut. When jointing long boards it is sometimes desirable to support the cut edge of the board, and we have provided supports of this nature at the feeding-out ends of the supporting-tables by providing an arm 141 at each of said feeding-out ends pivoted on a bolt 142 to the frame and having a supporting-finger 143 extending into the vertical plane of the table. The arm may be raised and lowered by the stub 145 for swinging the finger on its pivot into proper elevation when it may be clamped to the frame in adjusted position by means of the bolt 142. The finger normally rests in a recess 146 of the table.

Having thus fully described our invention what we claim as new and desire to secure by Letters Patent is:

1. A jointing machine for feeding a board edgewise over a cutter-head, comprising a table and a chain-guide sprung into a continuous curve from end to end vertically of said table.
2. In a jointing machine, the combination of a main frame provided with tables having plane upper surfaces, a chain-guide-way frame rigidly secured at its ends upon said main frame and located between said tables and having chain-guide-ways in its side edges, said side edges of said chain guideway frame being respectively sprung into continuous curves from end to end vertically of said respective tables, whereby said chain-guide-ways are respectively sprung into continuous curves from end to end vertically of said tables, substantially as described.
3. A jointing machine for feeding boards edgewise over cutter-heads comprising a table and a chain-guide having a chain-guideway at each side edge thereof sprung into a continuous curve from end to end vertically of said table.
4. In a jointing machine, the combination of a main frame provided with tables having plane upper surfaces and a chain-guideway frame rigidly secured at its ends upon said main frame and located between said tables and having chain-guideways therein normally parallel in horizontal planes with said plane upper surfaces of said tables, said main frame having a recess at its top between said tables for receiving said chain-guideway frame, an endless feeding-chain the stretches of which are guided by said



guideways, said stretches of feeding-chain being inside the outer edges of said tables, pressure means for said stretches of feeding-chain outside the inner edges of said tables, 5 said chain-guideway frame being spaced from said main frame throughout its length between its ends, and a hollow bolt and a threaded bolt therein at each side of said chain-guideway frame adjacent its middle 10 connecting said chain-guideway frame and main frame for bending said chain-guideway frame from its ends in a continuous curve relatively to said tables, substantially as described.

15 5. In a jointing machine, the combination of a main frame provided with tables having plane upper surfaces and a chain-guideway frame rigidly secured at its end upon said main frame and located between said tables 20 and having chain-guideways therein normally parallel in horizontal planes with said plane upper surfaces of said tables, said main frame having a recess at its top between said tables for receiving said chain-guideway frame, an endless feeding-chain 25 the stretches of which are guided by said guideways, said stretches of feeding-chain being inside the outer edges of said tables, pressure means for said stretches of feeding-chain outside the inner edges of said tables, 30 said chain-guideway frame being spaced from said main frame throughout its length between its ends, and a hollow bolt and a threaded bolt therein at each side of said chain-guideway frame adjacent its middle 35 connecting said chain-guideway frame and main frame for bending said chain-guideway frame from its ends in a continuous curve relatively to said tables, a feed-wheel at each end of said feed-chain, a housing for each of said feed-wheels, said chain-guideway frame having extensions at its respective ends secured between said housings and main frame.

45 6. In a jointing machine, the combination of a main frame, a chain-guide frame, said main frame having a recess at its top for receiving said chain-guide frame and positioning the same laterally, said chain-guide 50 frame being stationarily secured at its ends to said main frame and being spaced from said main frame throughout its length between its ends, tables on said main frame having plane feeding surfaces, said chain-guide frame having chain-guideways therein 55 normally parallel with the feeding surfaces of said tables, an endless feed-chain the stretches whereof travel in and are guided by said guideways, and means for springing 60 said chain-guide frame into curved form throughout its length between its ends for correspondingly curving said chain-guideways out of parallel lines with said tables.

7. In a jointing machine, the combination 65 of a main frame provided with tables having

plane upper surfaces, and a chain-guideway frame rigidly secured at its ends upon said main frame and located between said tables and having chain-guideways therein normally parallel in horizontal planes with said 70 plane upper surfaces of said tables, said main frame having a recess at its top between said tables for receiving said chain-guideway frame, an endless feeding-chain the stretches of which are guided by said 75 guideways, said stretches of feeding-chain being inside the outer edges of said tables, pressure means for said stretches of feeding-chain outside the inner edges of said tables, said chain-guideway frame being spaced 80 from said main frame throughout its length between its ends, and a hollow bolt and a threaded bolt therein at each side of said chain-guideway frame adjacent its middle 85 connecting said chain-guideway frame and main frame for bending said chain-guideway frame from its ends in a continuous curve relatively to said tables, a power feed-wheel at one end of said chain-loop, an idler-wheel at the other end of said chain-loop, housings for said wheels, the ends of 90 said chain-guideway frame being secured between said housings and main frame, substantially as described.

8. In a jointing machine, the combination 95 of a main frame, tables thereon having plane stock-supporting surfaces, a chain-guideway frame rigidly secured at its ends to said main frame and located between said tables and having chain-guideways therein normally horizontally parallel with said tables, 100 an endless feeding-chain the stretches whereof travel in said chain-guideways in opposite directions, pressure means for each of said stretches of feeding-chain, a cutter-head 105 located in vertical plane between each of said stretches and pressure means, independent shafts for said cutter-heads located opposite each other and spaced apart on said main frame, a shaving-chute in said 110 main frame common to both said cutter-heads, said chain-guideway frame having an opening therethrough between said chain-guideways communicating with said shaving-chute, and a cover for said opening, 115 substantially as described.

9. In a jointing machine, the combination of a main frame, a chain-guideway frame secured thereto, said chain-guideway frame having chain-guideways at its side edges, a 120 feeding-chain the stretches whereof are caused to travel in said guideways in opposite directions, pressure means opposite each of said chain-guideways, a table in vertical plane between each of said stretches and 125 pressure means, a cutter-head rotatable under each of said tables, shafts for said respective cutter-heads having axes normally parallel, the inner ends of said shafts being spaced apart, a saddle for each of said 130



shafts, each of said saddles having a pivot closely adjacent the cutter-head thereon, a slide for each of said saddles on which the same is pivoted, means for adjusting said slides independently up and down on said main frame, means between the outer ends of said saddles and slides for adjusting said saddles on their pivots, each of said saddles having depending lugs located at the respective sides of said respective slides, and clamping rods between said lugs for clamping said lugs to the sides of said respective slides, substantially as described.

10. In a jointing machine, the combination of a main frame, a table, a cutter-head, a feeding-chain and a pressure-bar between which the board is fed over the cutter-head, a board-support pivoted at the side of said main frame at the feeding-out end of the latter, a recess in said table at said board-support, said board-support having a board-supporting finger received by said recess, below the horizontal plane of said table and in vertical plane, with said table, said finger being adjustable to elevation above said table by swinging said board-support upon its pivot, and means for clamping said board-support in adjusted position, substantially as described.

11. In a jointing machine, the combination of a main frame, a chain-guide thereon, a feeding-chain having upright feeding faces for said chain-guide, a pressure-bar supported by said main frame, means for adjusting said pressure-bar toward and from said feeding-faces, said pressure-bar comprising a housing having a longitudinal recess for forming an inner wall and upper and lower walls for said pressure-bar, a series of roller-yokes in said recess, said

roller-yokes having sliding side-contact with each other and sliding contact with said upper and lower walls, said roller-yokes have threaded shanks and said rear walls of said pressure-bar having apertures through which said shanks project, springs surrounding said shanks for urging said roller-yokes toward said feeding faces, and nuts on said threaded shanks outside said pressure-bar for adjustably limiting said latter movement, substantially as described.

12. In a jointing machine of the character described, the combination of a main frame, a chain-guide frame thereon, a pressure-bar opposite the latter, a feeding-chain, said chain-guide frame having a groove in its side in which said feeding-chain has feeding movement, said feeding-chain comprising links, one end of each of said links being provided with separated ears and the other end thereof provided with an intermediate ear, said ears of adjoining ends of adjacent links having mating holes and the upper ear having an enlarged recess mating said holes, a headed pin fitting loosely in said holes with its head received by said recess at adjoining ends of each pair of links, said chain-guide frame having adjoining but separated oil-cups, one of which communicates with the top of said feeding-chain while the other communicates with the side of said feeding-chain, substantially as described.

In testimony whereof, we have subscribed our names hereto in the presence of two subscribing witnesses.

JOHN R. THOMAS.  
PETER A. SOLEM.

Witnesses:

THOS. P. EGAN,  
RICHARD D. COAN.