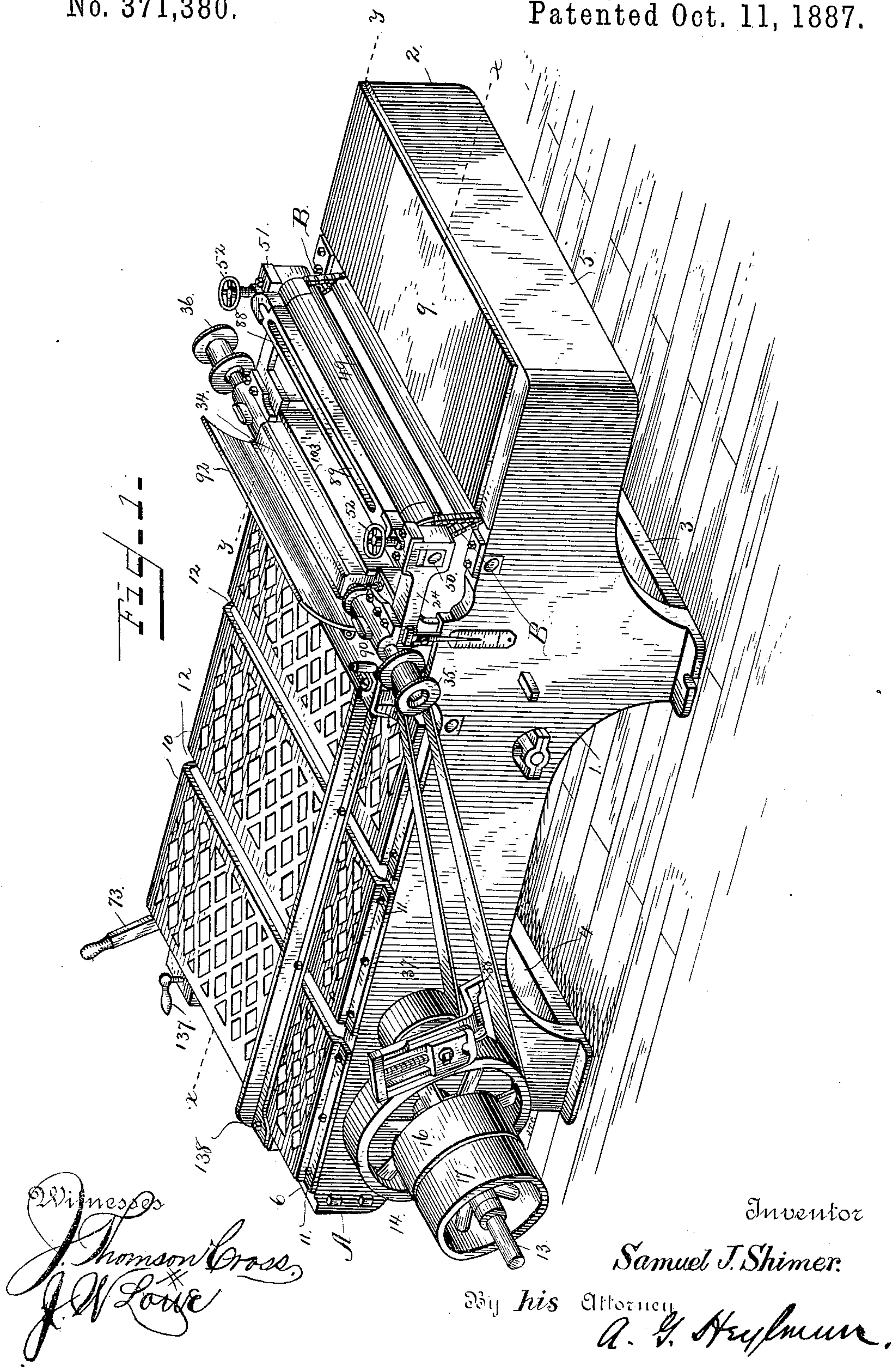


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No. 371,380.

Patented Oct. 11, 1887.



(No Model.)

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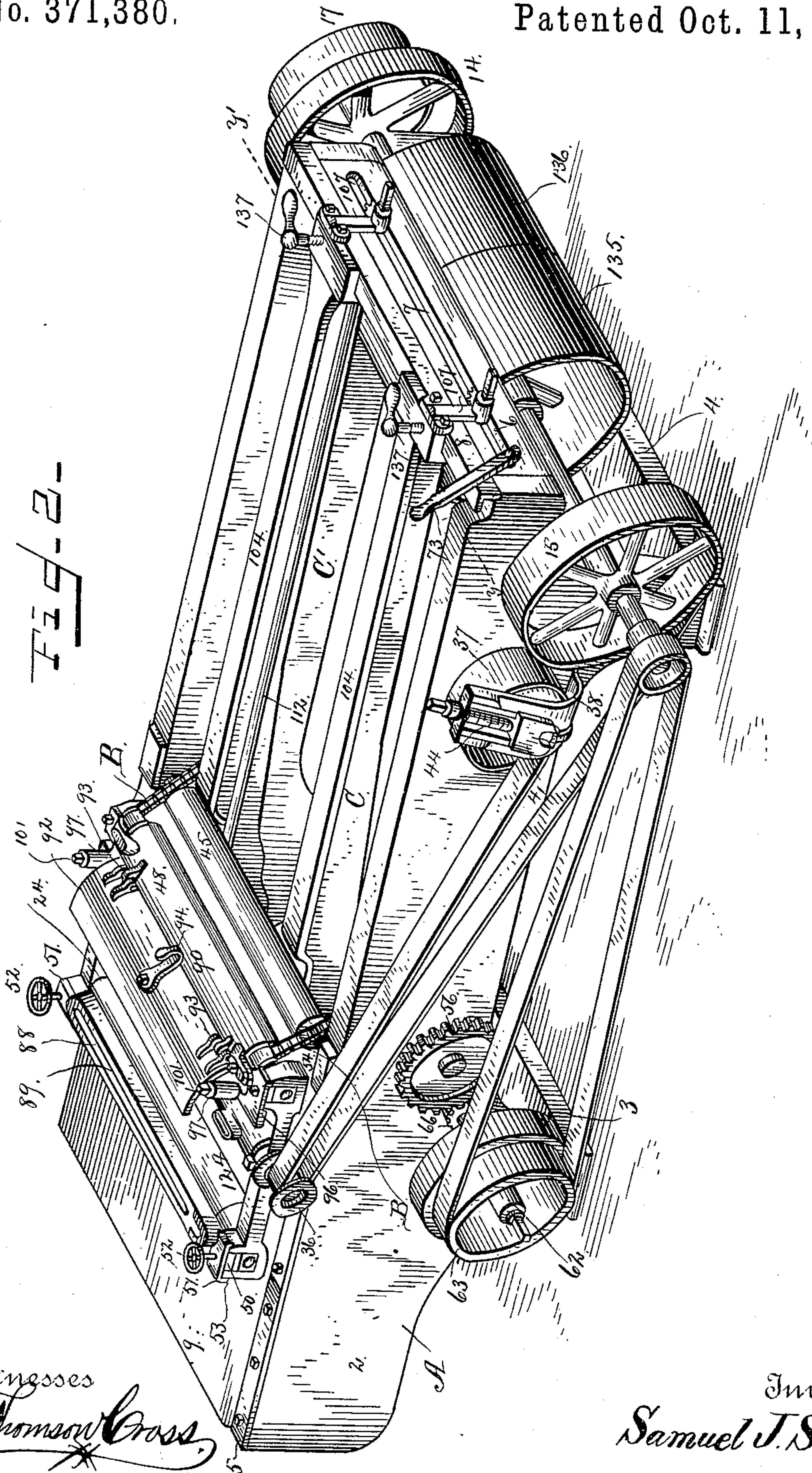
S. J. SHIMER.

WOOD WORKING MACHINE.

No. 371,380.

Patented Oct. 11, 1887.

Fig. 2-



Witnesses
Thomas Cross
S. F. Morduke

Inventor
Samuel J. Shimer.

By his Attorney
A. H. Heyman

(No Model.)

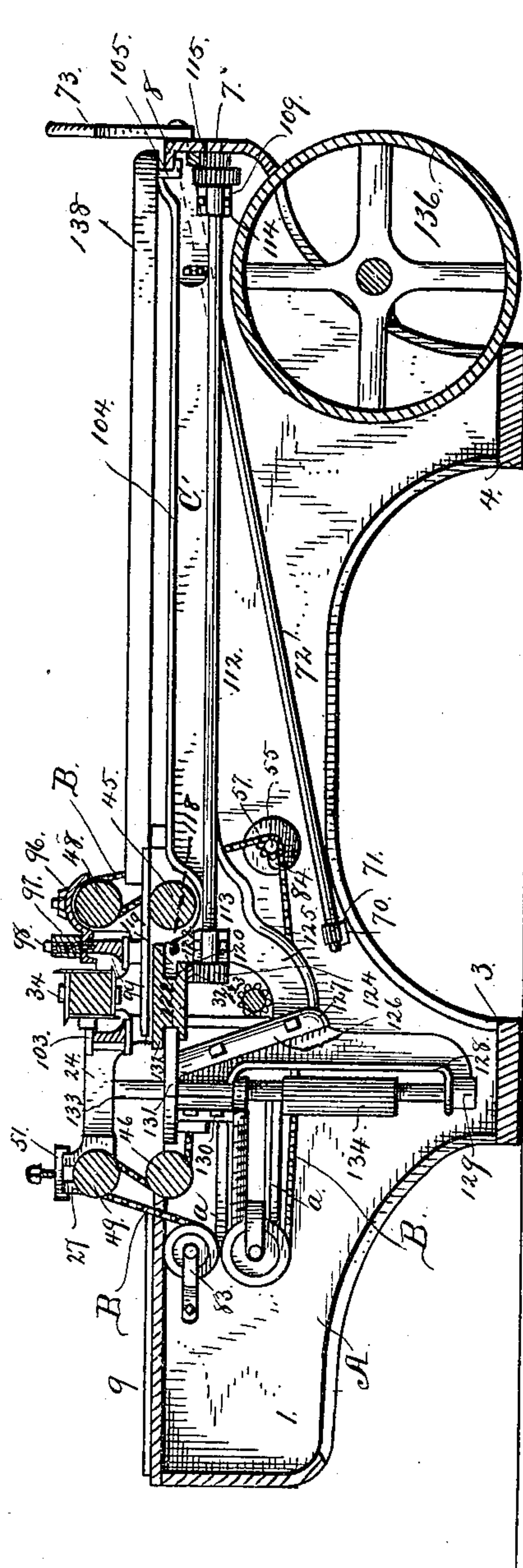
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WOOD WORKING MACHINE.

No. 371,380.

Patented Oct. 11, 1887.

Fig. 3.



Witnesses
Thomson Crose
S. F. Mordlake

Inventor
Samuel J. Shimer
By his Attorney
A. G. Huffman

S. J. SHIMER.
WOOD WORKING MACHINE.

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Patented Oct. 11, 1887.

Fig. 4

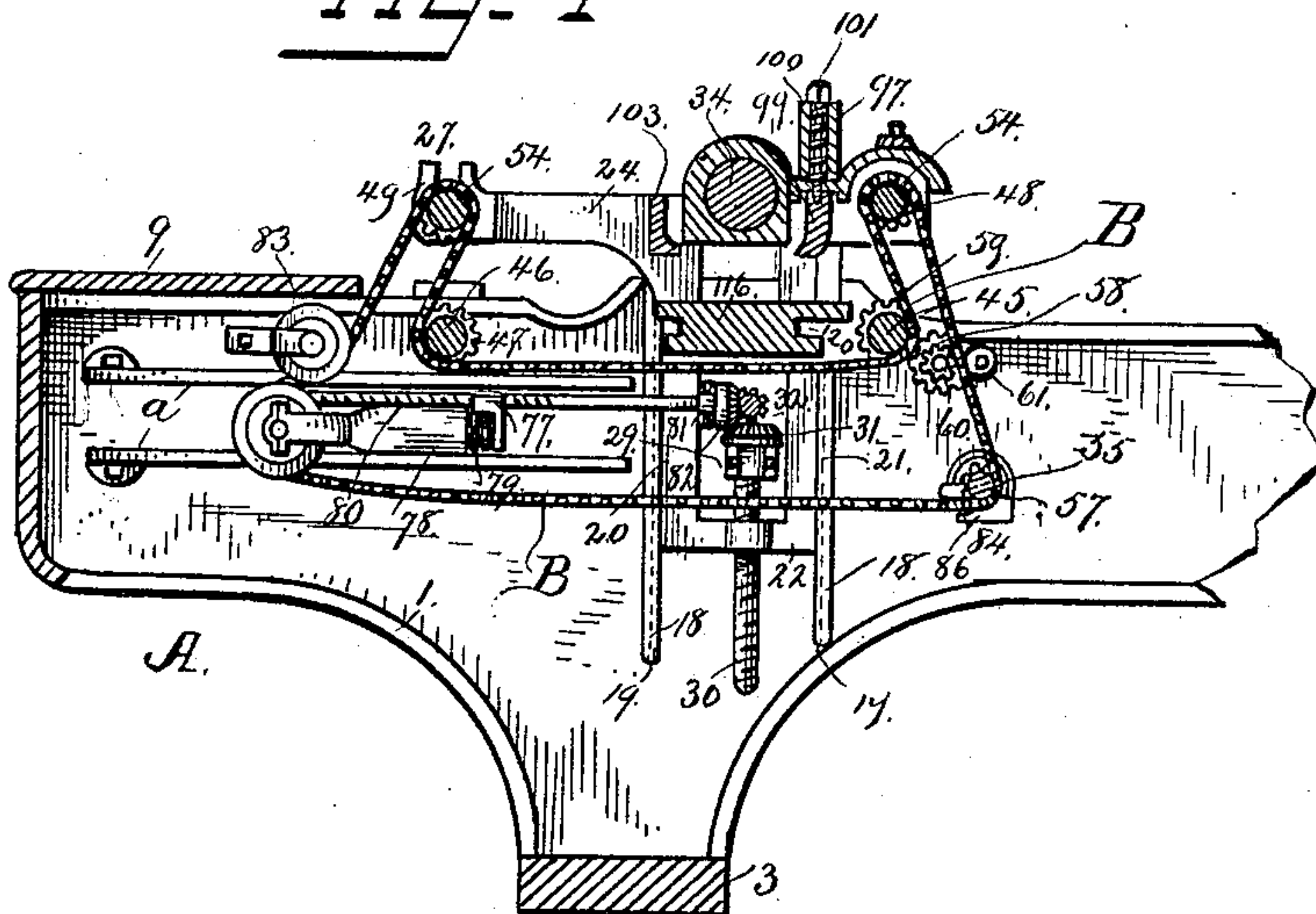
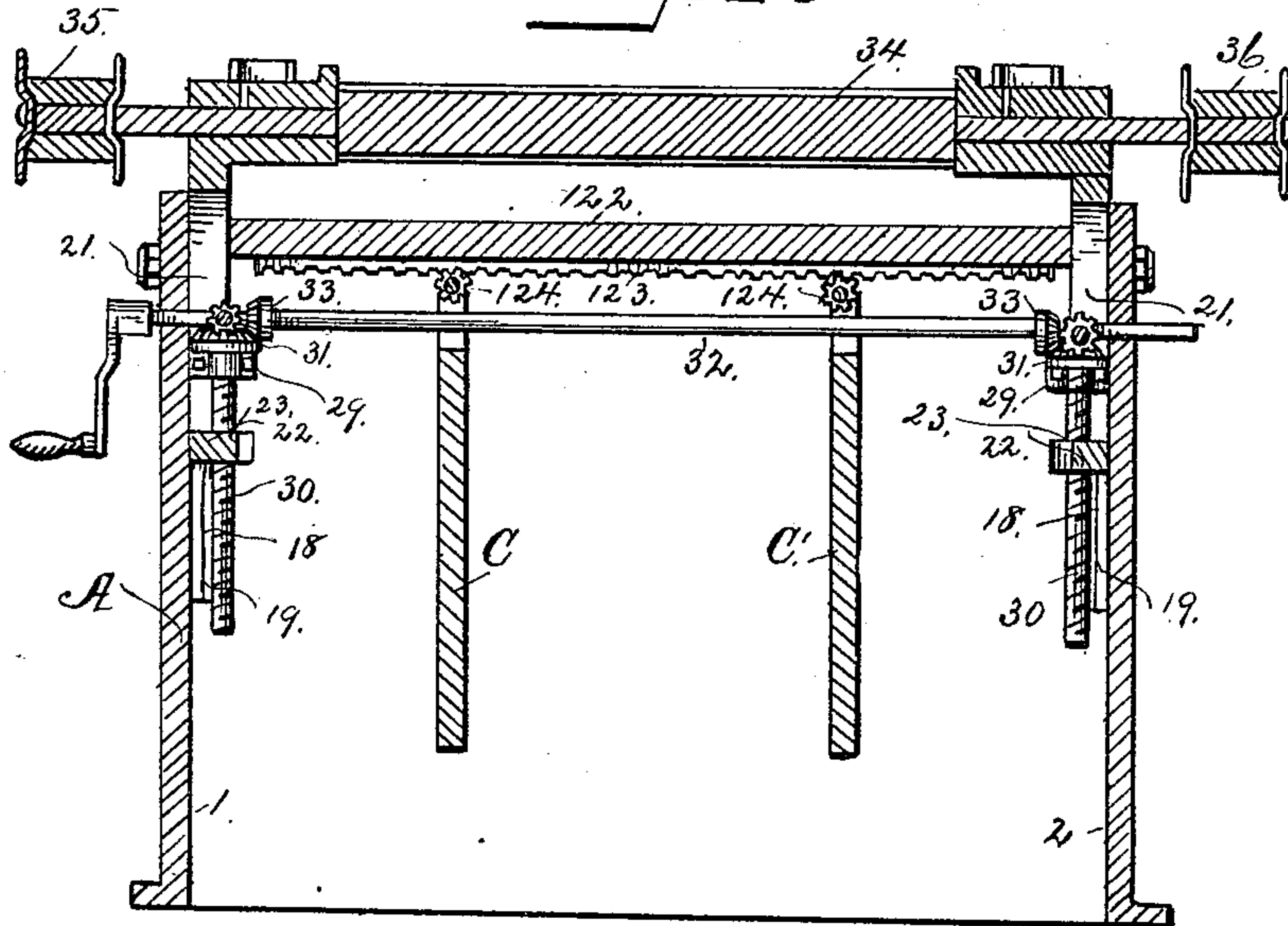


Fig. 5



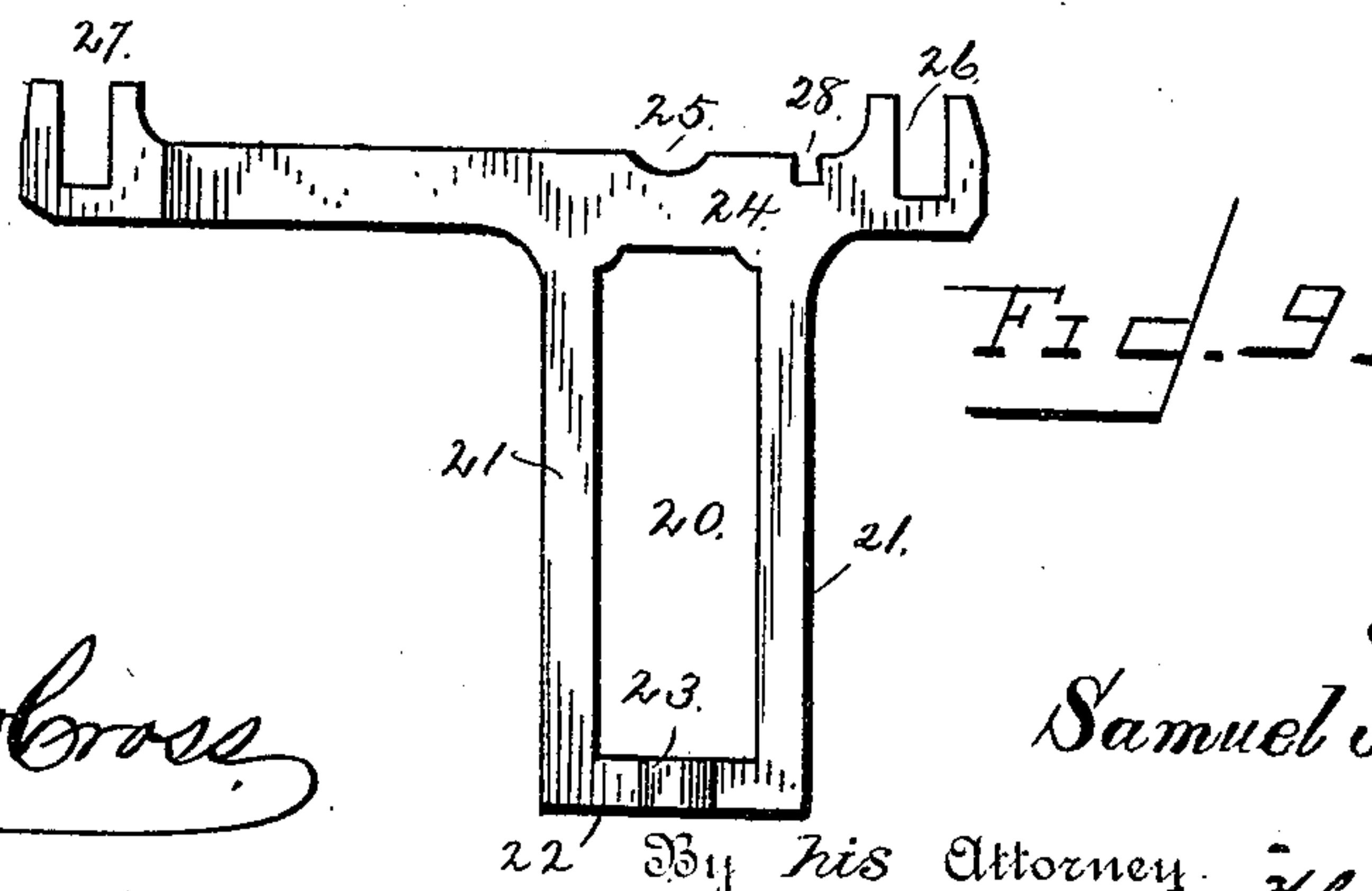
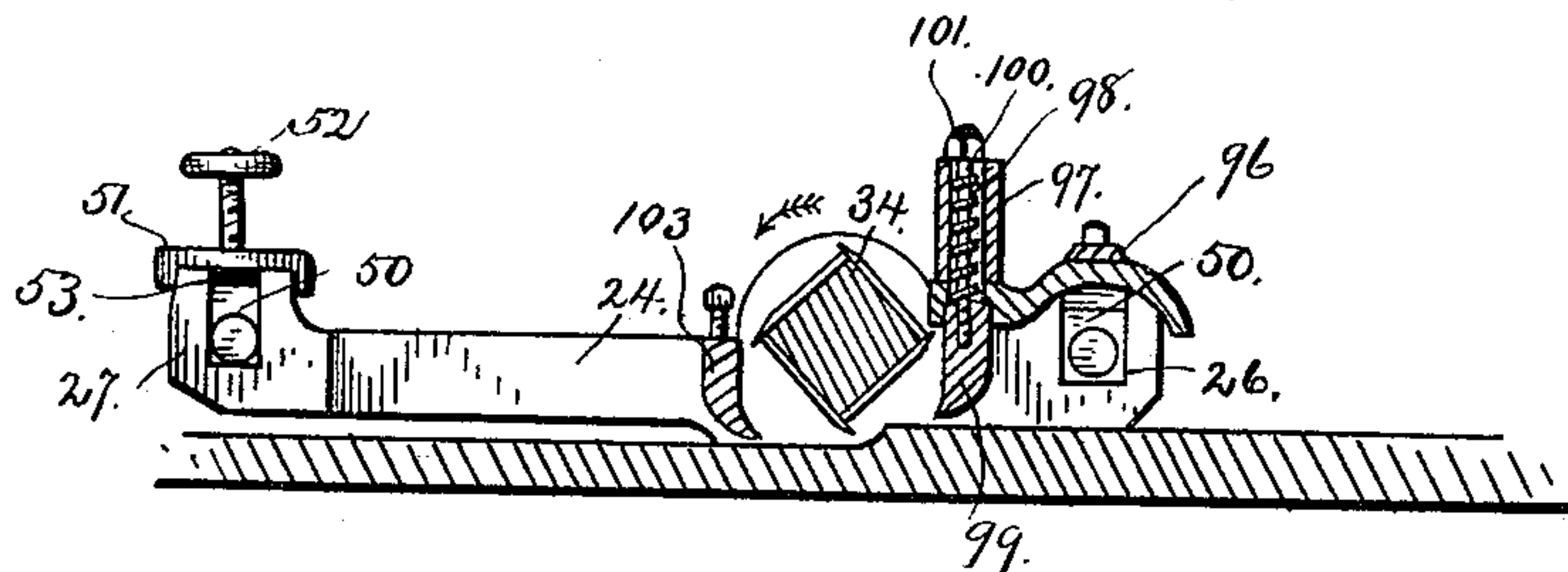
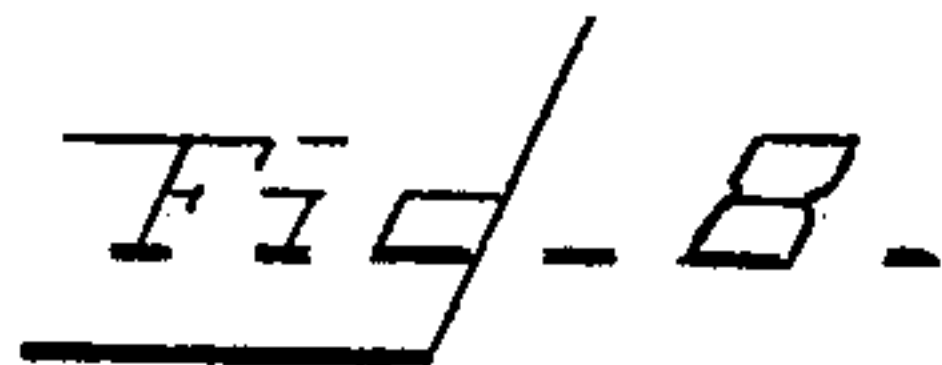
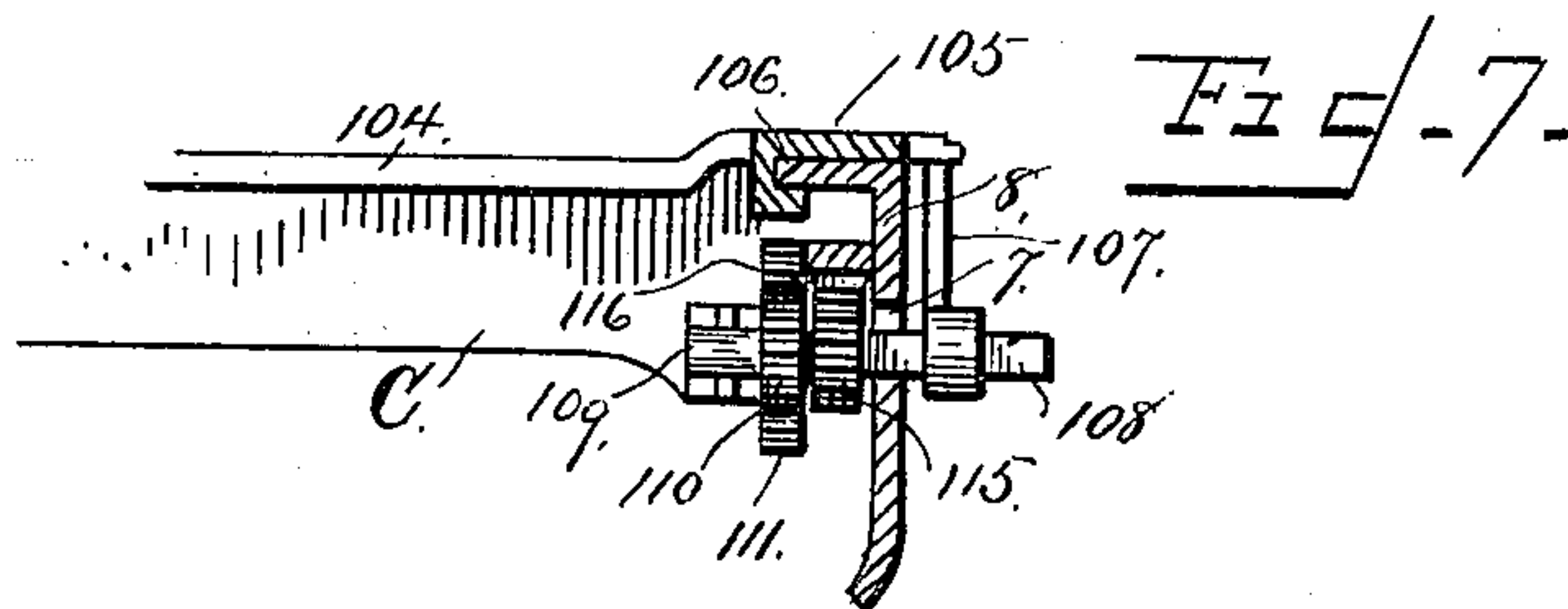
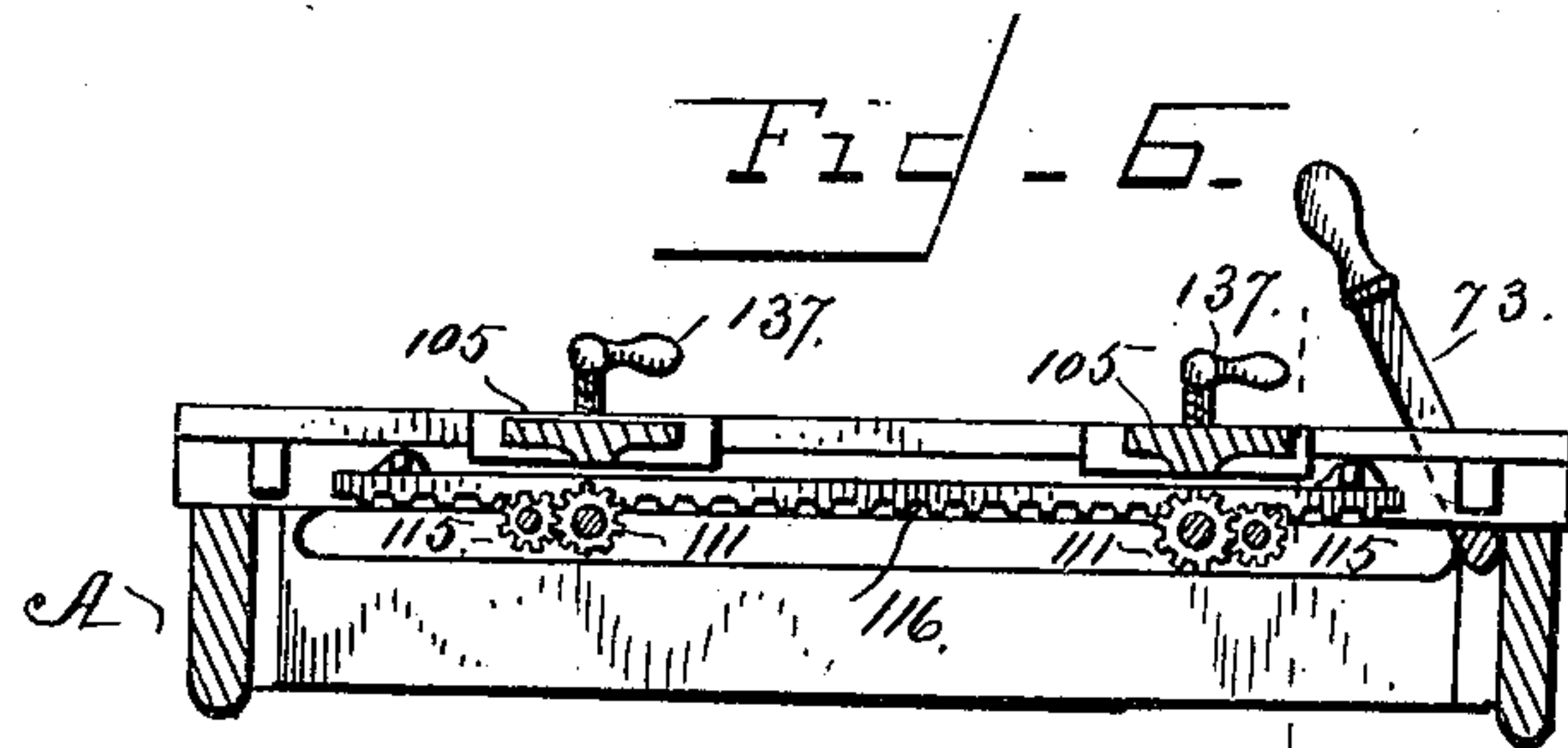
Witnesses
J. Thomson Cross
S. F. Wardlake

Inventor
Samuel J. Shimer.
By his Attorney
A. G. Heyman.

S. J. SHIMER.
WOOD WORKING MACHINE.

No. 371,380.

Patented Oct. 11, 1887.



Witnesses
J. Thomson & Co.
S. F. Murshull

Inventor
Samuel J. Shimer.
By his Attorney
A. G. Heyman.

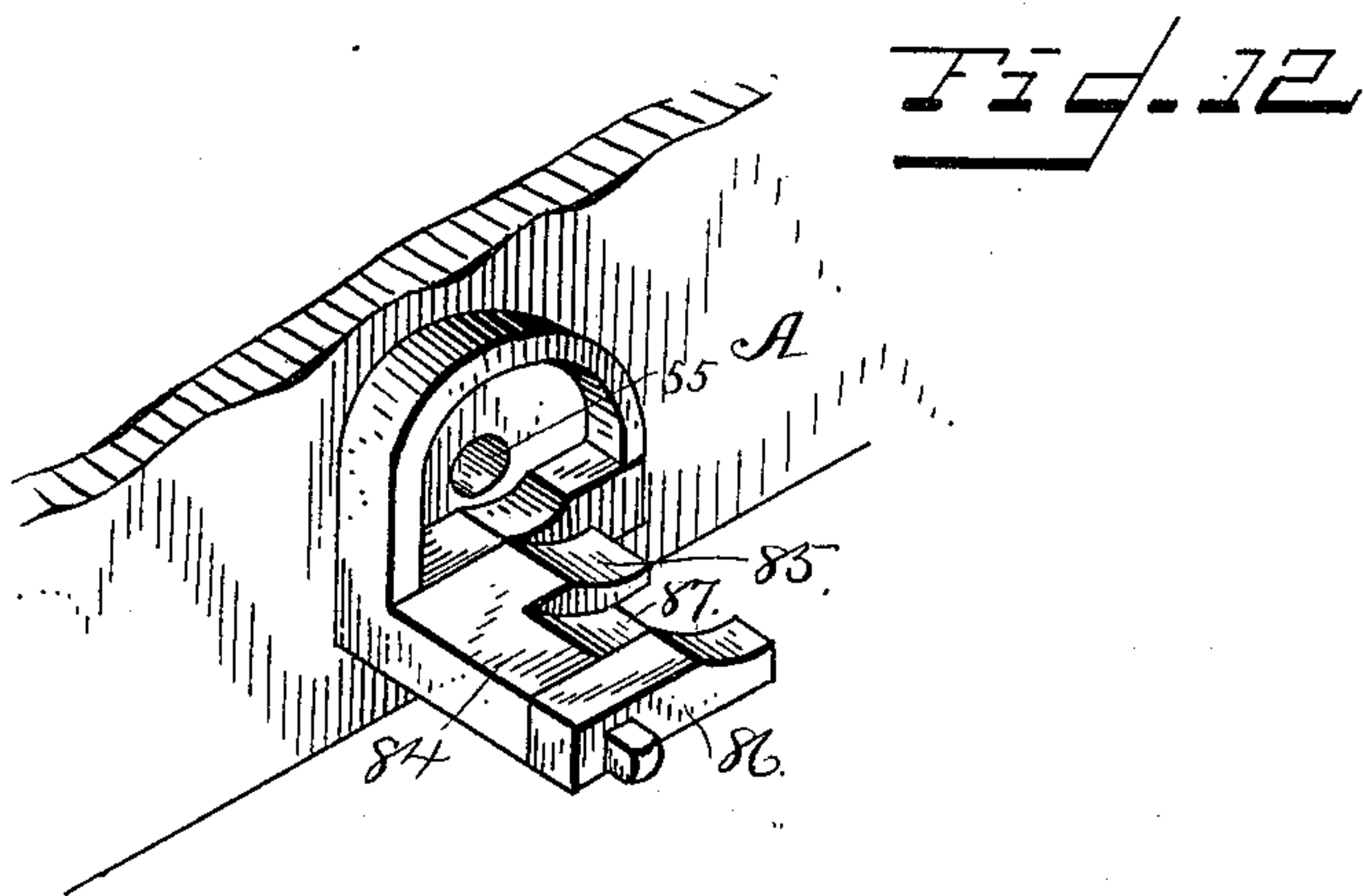
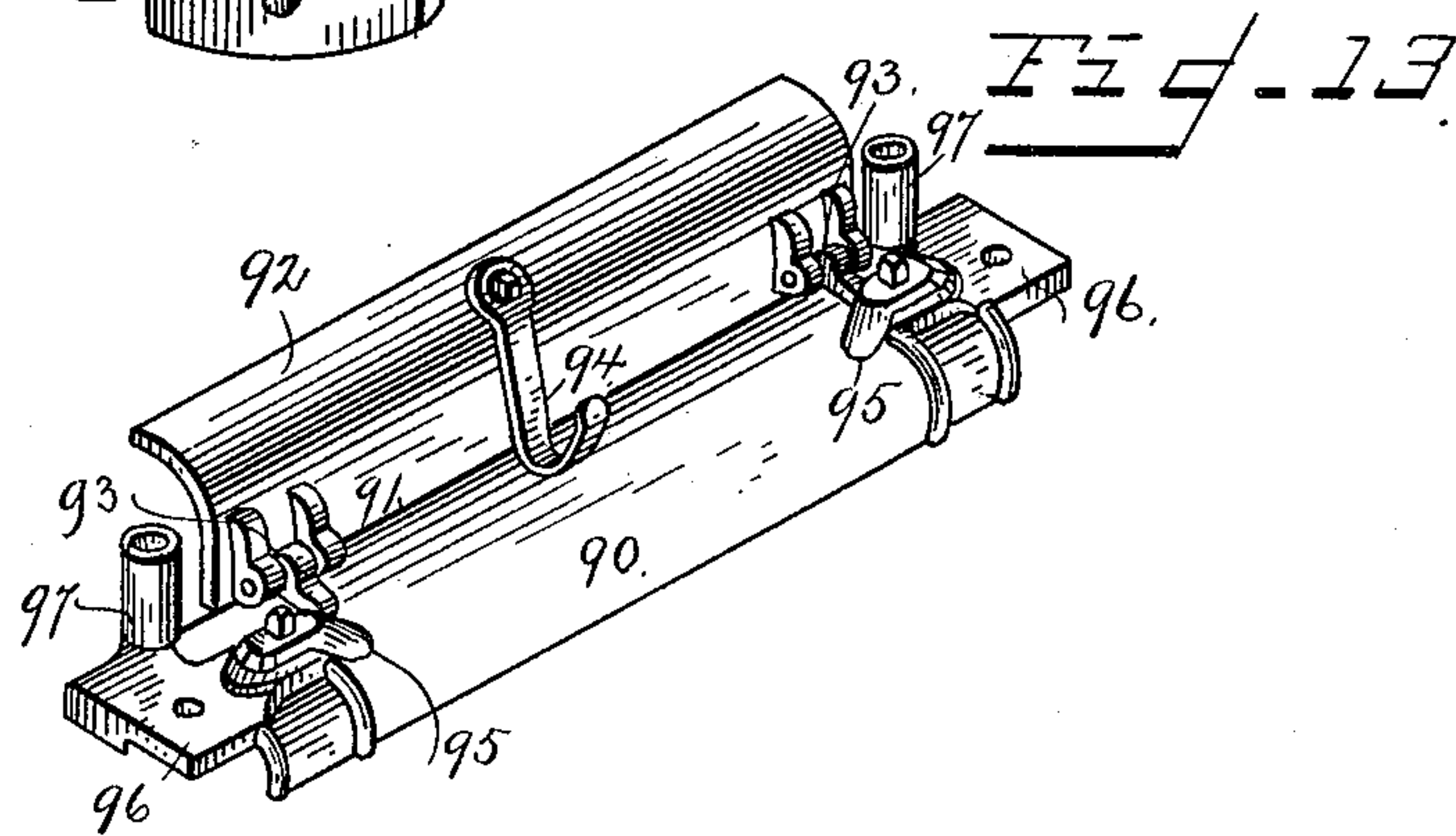
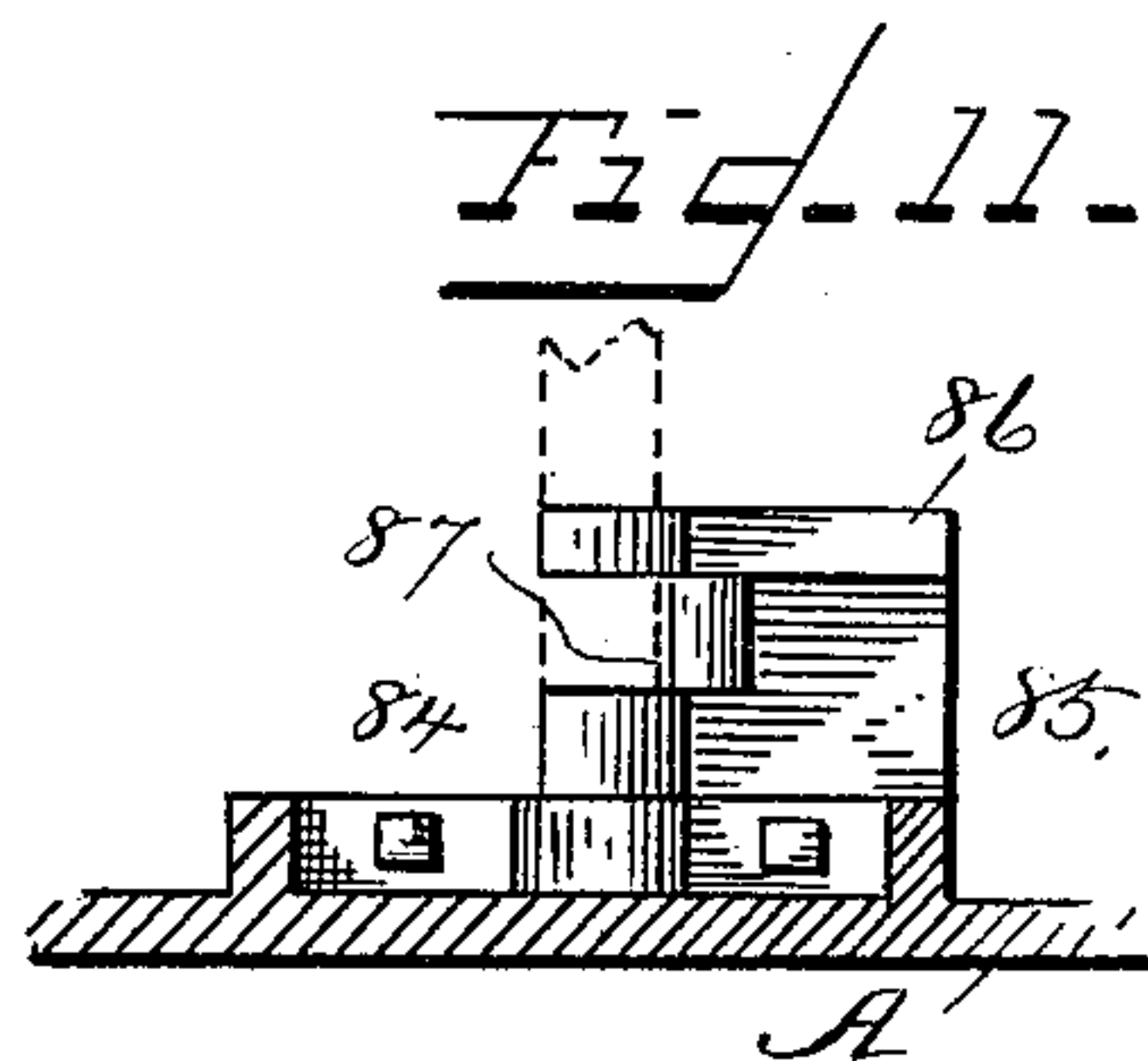
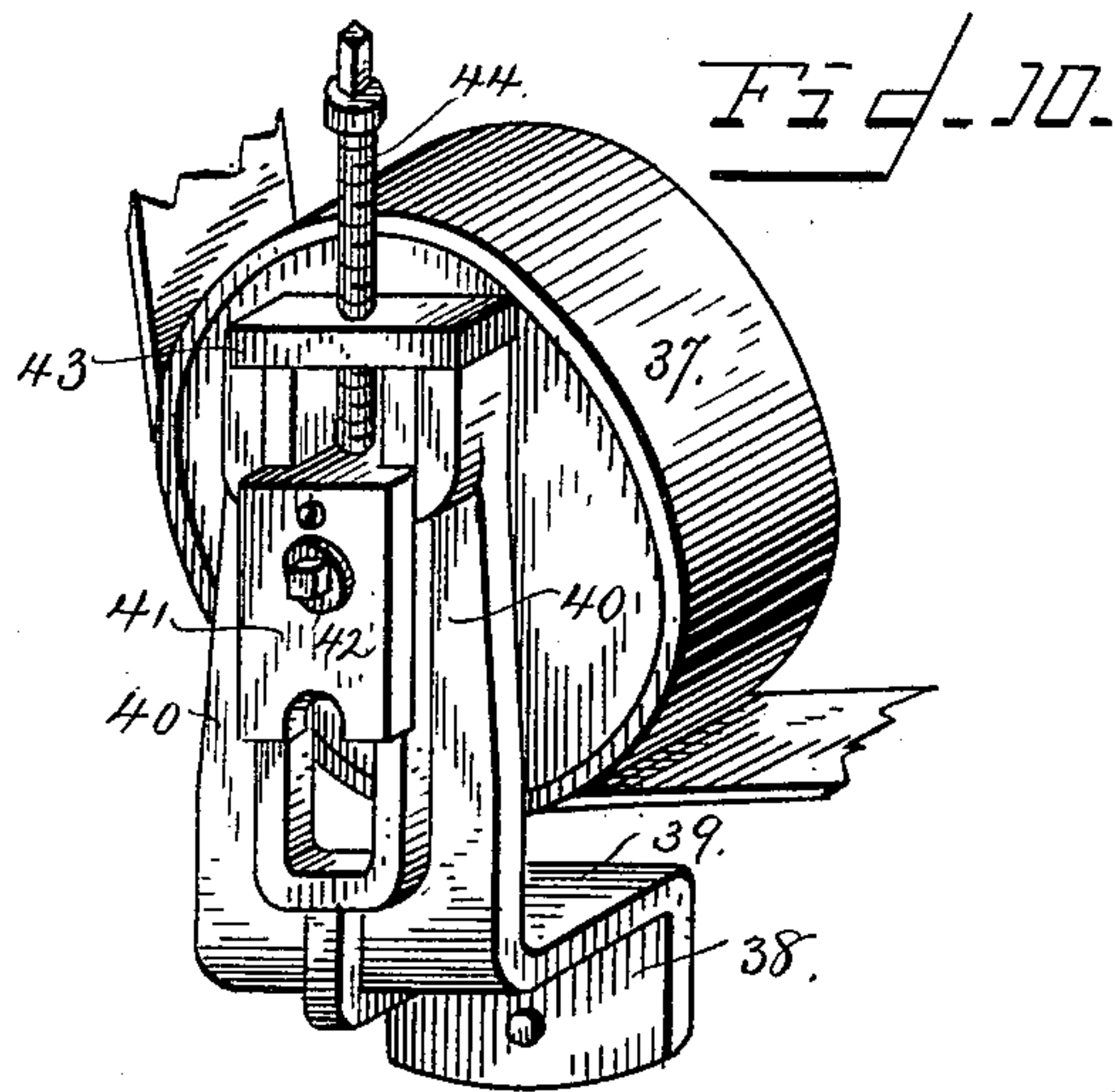
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S. J. SHIMER.
WOOD WORKING MACHINE.

No. 371,380.

Patented Oct. 11, 1887.



Witnesses
J. Thompson Cross
S. F. Wardwell

Inventor
Samuel J. Shimer
By *his* Attorney
A. G. Heyburn

(No Model.)

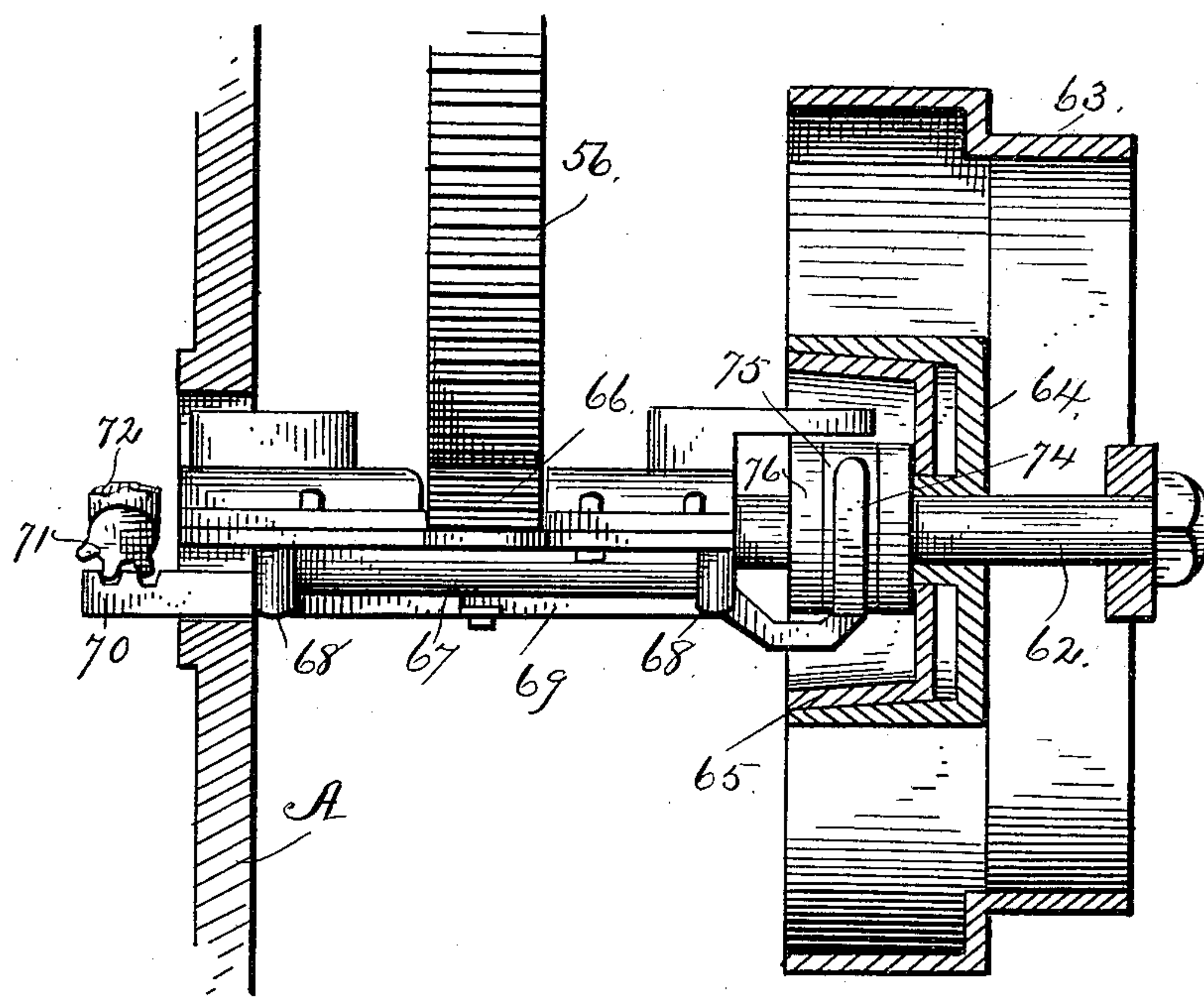
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S. J. SHIMER.
WOOD WORKING MACHINE.

No. 371,380.

Patented Oct. 11, 1887.

Fig. 14.



Witnesses

J. Thomson Cross
S. F. Mordale

Inventor

Samuel J. Shimer.

By his Attorney

A. G. Heylman

(No Model.)

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S. J. SHIMER.
WOOD WORKING MACHINE.

No. 371,380.

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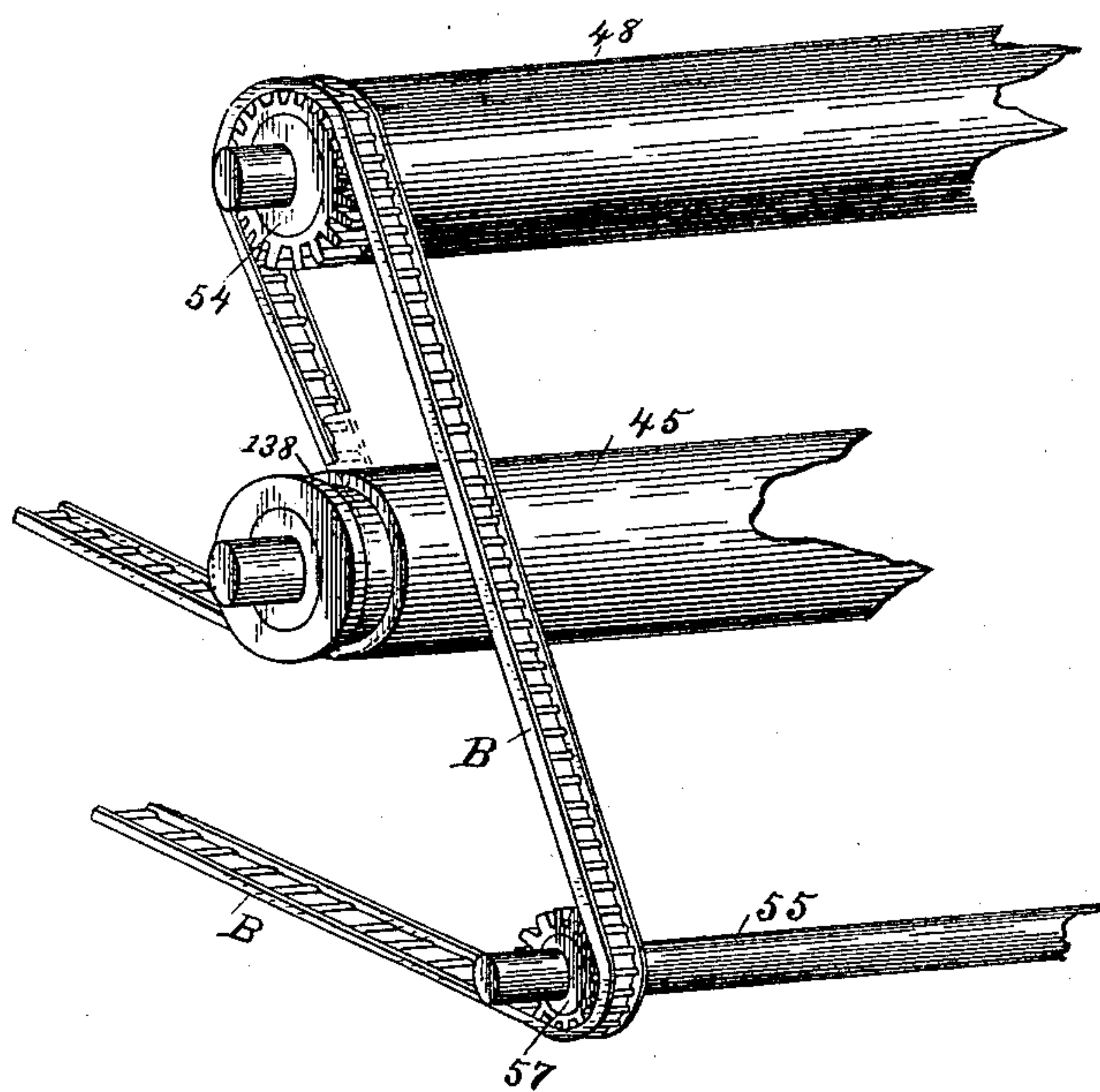


Fig. 15.

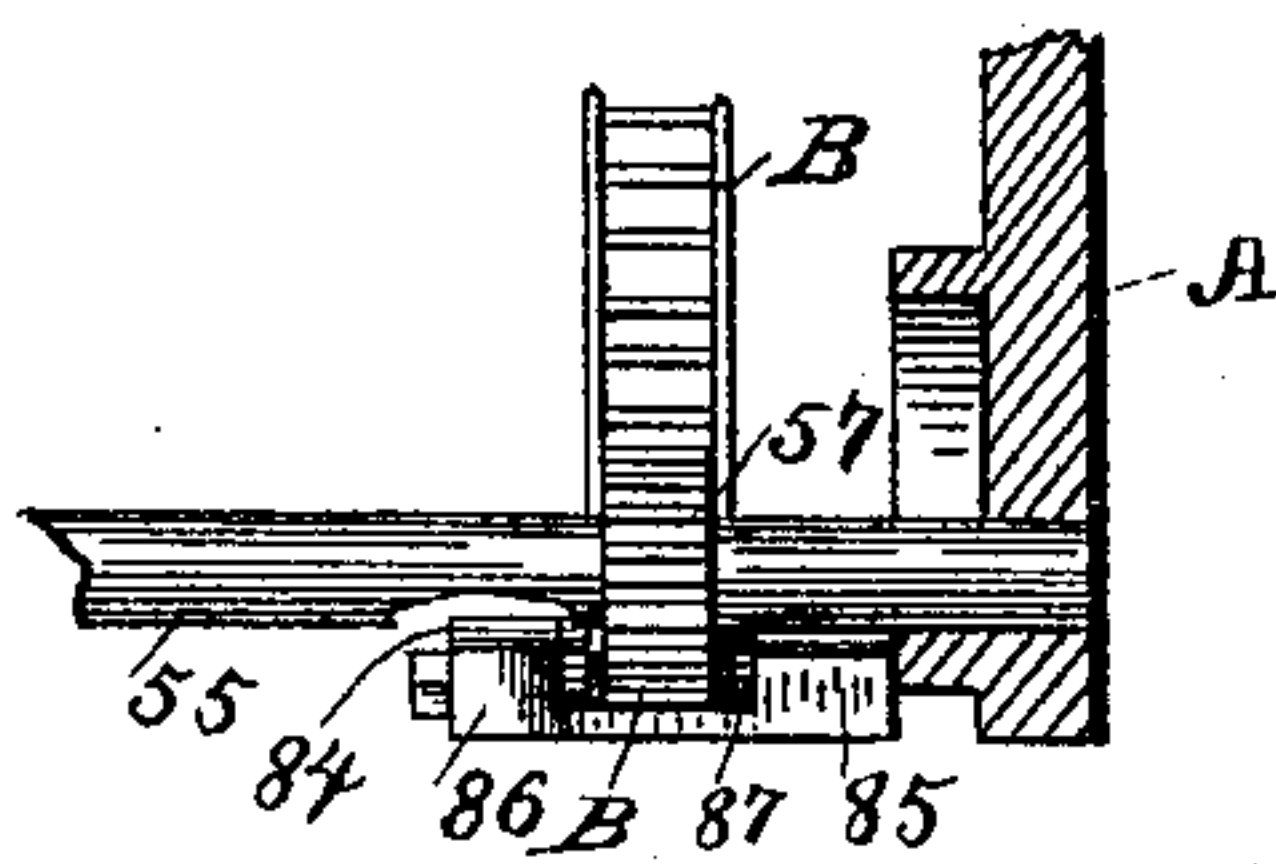


Fig. 16.

Witnesses

G. A. Tauberschmidt,
Wm. H. Bates.

Inventor

Saml. J. Shimer

By his

Attorney

A. G. Hyman.

UNITED STATES PATENT OFFICE.

SAMUEL J. SHIMER, OF MILTON, PENNSYLVANIA.

WOOD-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 371,330, dated October 11, 1887.

Application filed December 6, 1886. Serial No. 220,856. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. SHIMER, a citizen of the United States of America, residing at Milton, in the county of Northumberland and State of Pennsylvania, have invented a new and useful Wood-Working Machine, of which the following is a specification.

My invention has relation to wood-working machines of that class known as "planers," and intended to smooth the surfaces of the stock by paring or planing, and the novelty specially embraces improvements on that certain invention in planers shown and described in the application for Letters Patent in the name of myself and the late George J. Shimer, deceased, as joint inventors thereof, and filed on or about the 21st day of October, A. D. 1886, and numbered 216,791; and I therefore in this application make no claim to the arrangement, construction, and combination of parts shown, described, and claimed in said cited application, except as the same are changed and improved by my own invention, and substantially as the same is specifically pointed out in the claims made hereto.

My invention therefore consists in the novel construction of parts and their combination, as will be hereinafter more fully specified, and specially as pointed out in the claims.

My improvements in connection with a planing-machine of the kind shown and described in said cited application are fully illustrated in the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a perspective view of the planer looking from the front. Fig. 2 is a perspective looking from the rear. Fig. 3 is a longitudinal sectional view, in elevation, taken on the line $x x$ of Fig. 1, showing one of the carrying-arms of the matcher-spindles and partially the arrangement of the chain. Fig. 4 is a longitudinal sectional view, in elevation, on the line $y y$ of Fig. 1, showing the arrangement of the chain and the mechanism for vertically adjusting the roller frames or brackets and adjusting the take-up pulley of the chain. Fig. 5 is a transverse sectional view showing the gear for adjusting the roller frame or bracket. Fig. 6 is a transverse sectional view on the line $y' y'$ of Fig. 2, showing the rack-bar and gear for moving and adjusting the carrying-arms of the matcher-spindles. Fig.

7 is a detail view, partly in section, of the mechanism shown in Fig. 6. Fig. 8 is a view showing the carrying arm of the rollers, the planer-head and presser-bar in cross-section, and the elastic pressing device on the box of the front upper feed-roller. Fig. 9 is a view of the adjustable bracket which carries the upper rollers, the planer-head, and pressure-bars. Fig. 10 is a perspective of the tightener on the driving-belt. Fig. 11 is a plan view of the shoe on the driving sprocket of the chain. Fig. 12 is a perspective of the same. Fig. 13 is a view of the shoe and shield of the upper rear feed-roller and the carrying-arm of the pressure bar. Fig. 14 is a view of the clutch-gear of the chain-feed. Fig. 15 is a perspective of a portion of the principal feed-rollers, arranged in relative position, made on a larger scale than the other figures, to better show the construction of the rollers and the arrangement of the chain about the sprockets and channels; and Fig. 16 is a detail view of the guide shoe, showing the guide shoe fixed to the side piece of the frame and the sprocket and chain in operative position.

Reference being had to the drawings, wherein like notations indicate the same elements, the letter A designates the frame of the machine. This is of cast metal and is composed of substantial side pieces, 1 2, formed with legs seated on binding-plates 3 4, which are connected or secured to the legs by any well-known means. The ends of the side pieces are bound together by stout plates 5 6, of cast metal, the plate 6 on the rear of the machine being formed with a longitudinal slot, 7, extended for its length to take the necks of the short shafts which carry the operating-gear for the carrying-arms of the spindles of the matcher-heads, and the upper part is formed with an inwardly-projecting flange, 8, over which the recesses of the adjusting-brackets set and slide. The projecting front end of the frame is covered by a top plate, 9, flanged on the ends and secured to the side pieces by bolts projecting through the ends, substantially as seen in the drawings.

The rear or carrying bed of the machine is covered by two or more bed-plates, 10, having the ends turned down, forming flanges 11, which set on the edges of the side pieces and are secured thereto by threaded bolts. These bed-plates are formed with openings, as shown,

in them to let the chips and dirt fall through and to save metal in construction, and they are arranged with openings between their adjacent side edges, forming slots 12, to admit the bolts which hold the gage-bar on the carrying-arm and permit it to be moved with said arm to any position on the bed-plates. The side pieces of the frame are formed with suitable apertures and seats to receive the bearings of the shafts and feed-rollers.

The numeral 13 designates the driving-shaft mounted across the frame in suitable bearings and having secured on the parts projecting outward from the side pieces of the machine the belt-pulleys 14 15, arranged one on each side, and also having the fixed driving-pulley 16 and the loose pulley 17, which are connected by belt to the power. (Not shown.) On the inner face of each side piece of the frame, at that part over which are mounted the planer-head and upper feed-rollers, are formed vertical flanges 18, in the inner faces of which are channels 19, to take and hold the adjustable brackets which carry the upper feed-rollers and planer-head. The metal of the side pieces at this part is raised above the common line, forming a seat for the brackets. In these vertical flanges 18 are disposed the vertically-adjustable brackets or carrying-pieces 20. These consist of a frame composed of vertical side standards, 21, to fit and slide in the channels 19 of the flanges 18, and are united at their lower ends by an end piece, 22, integral therewith, this end piece being enlarged in the middle and provided with a threaded aperture, 23, in which the stem of the adjusting-screw is fitted. On the upper end of the side standards, 21, is formed a horizontally arranged carrying-arm, 24, formed with a box-seat, 25, to carry the planer-head, a shorter arm in which is formed a box-seat, 26, for the rear upper feed-rollers, and a longer arm formed with a box-seat, 27, for the upper front feed roller, and pressure-bar seat 28. On the inner face of each side piece of the frame is a journal box and cap, 29, in which is journaled a vertical screw, 30, having its threaded stem passed into the threaded end of the bracket and carrying on its upper end a small bevel gear-wheel, 31. Mounted across the frame of the machine, in bearings in its side pieces, is a shaft, 32, carrying small bevel gear-wheels 33, which mesh with the bevel-gears on the screws, substantially as shown. The end or ends of the shaft 32 are extended and formed to take a hand crank or wrench, by which the shaft may be rotated, the screws operated, and the carrying arms with their mounted elements raised and lowered. The elements comprised in the foregoing description of these brackets and the means of adjusting them are shown and described in the application for Letters Patent hereinbefore cited, the arrangement differing herein by reversing the connection of the screw, in order that the adjusting-pulley of the chain-feed may be conveniently mounted, and, except as in combination with

the said pulley, hereinafter described, and the elements operating in agroupment therewith, no claim is made to said adjusting devices or mechanism in this application.

The numeral 34 designates the planer head, which may be of any of the approved styles of construction. It is shown as consisting of a rectangular body with four knives adjustably secured thereto. The journals of this head are mounted in the bearings in the cross-head or arm of the adjustable brackets and centrally over the frames in the channeled flanges. The ends of the shaft of the planer-head are extended and have belt-pulleys 35 36 fixed thereon, the former of which is belted to the main pulley 14, and the latter similarly connected to the other main pulley, 15. Tightening-pulleys 37 are mounted to bear on the upper line of the belting. To the side of the machine is secured a bracket, 38, having a lateral arm, 39, carrying vertical standards 40, between which is fitted the sliding piece 41, in which is rigidly mounted the spindle 42, carrying the tightening pulley 37. Across the tops of the standards is secured a cap, 43, having a screw, 44, let through it, with the lower end swiveled in the upper end of the sliding piece 41. By turning the screw in the desired direction the sliding piece, with the tightening-pulley, is moved up and down and the pressure on the belt increased or lessened.

The numeral 45 designates the lower rear feed roller, and 46 the forward lower feed-roller. These are mounted in bearings arranged, substantially as shown, in the side pieces of the frame. The roller 46 has formed in necks between the bearing and the shoulder of the roller sprocket-teeth 47, to engage the links of the feed chain; but the roller 45 is formed with annular channels about its necks, so that the take-up or slip of the chain may be made when the upper roller is lifted by the stock, and the tension of the chain accommodated to the change without jeopardy to it or to the associated mechanism. Both of these lower feed-rollers are non-adjustable in their bearings, being held therein by box-caps or other suitable means.

When both principal feed-rollers are connected by sprocket gear and chain they must move together with a common speed, so that when a piece of stock of varying thickness is passed between them one of them must slip to compensate for the greater surface distance over which it travels. To remedy this and to relieve the power or chain from the strain of making one roller slip the extra distance, I construct one of the principal feed-rollers with a plane annular channel about its neck, and the other one I provide with a sprocket to take the links of the chain. This permits the rollers to accommodate themselves to the variable speeds until the obstruction is passed over, and it also increases the yielding functions of the rollers, because they are not positively restrained or limited by being geared together in the common way.

The numeral 48 designates the first or principal rear upper feed-roller, and 49 the forward upper or delivery feed-roller. These are mounted in the box-seats in the arms of the cross-head of the adjustable bracket and having closed bearing-boxes 50. The bearing-boxes of roller 49 are loosely seated in the box-seats to have a vertical movement to accommodate the variations to which the roller may be subjected during the progress of the stock; and in order that the tension of this roller may be positively limited yet restrained with a yielding force, caps 51 are secured over the box-seats and a tension-screw, 52, projected through these caps, the ends of which bear on a plate carrying an elastic cushion, 53. These upper feed-rollers have necks with sprockets 54 between the shoulders and the bearings, same as heretofore mentioned in the construction of the forward upper feed-roller.

Mounted in bearings in the frame is the feed driving-shaft 55, carrying on its end a gear-wheel, 56, which meshes with a gear-wheel on a clutch mechanism, hereinafter described. Fixed on this feed driving-shaft are small sprocket-wheels 57, constituting the driving-wheels of the feed-chain and arranged to align with the sprockets and channel on the necks of the feed-rollers. Mounted on journals fixed to the inner face of each side piece of the frame are small gear-wheels 58, which mesh with gear-teeth 59 on the lower rear feed-roller and on the same journal as the gears 58, and formed as a part thereof or fixed thereto are the small sprocket-wheels 60, which engage with the links of the chain and thus impart a positive motion to the said feed-roller. The chains are held to the sprockets 60 by an idler, 61, journaled on a pin set in the side piece of the frame. On a shaft, 62, projected from the side of the frame, is journaled the loose belt-pulley 63, formed on its inner side with a clutch-ring, 64, which is engaged by a sliding clutch-wheel, 65, arranged on shaft 62, and on the shaft is a small gear-wheel, 66, which meshes with the gear-wheel 56 on the feed driving-shaft. In the under face of the bearing-arm carrying the shaft 62 is a groove or channel, 67, with keepers 68, in which is arranged the sliding clutch-rod 69, having its end extended through the side of the machine and formed with a rack, 70, which is engaged with a gear, 71, on a lever-rod mounted to turn in keepers 72 on the inside of the frame and operated by a handle, 73, at the rear end of the machine. The other end of the clutch-rod 69 is formed with a yoke, 74, which sets in the annular groove 75 of a sleeve, 76, on the shaft and to which is fixed the clutch 65. By turning this handle the gear on the rod is moved and, engaging with the rack on the clutch-rod, the clutch is thrown in and out of engagement, and the feed thus stopped and started.

On the inner face of each side piece of the frame are formed horizontal flanges *a*, in which is arranged a sliding box, 77. In this sliding box is fitted a pulley-carrying arm, 78, having

journaled therein a pulley with a channel in its face to guide or hold the chain, and the rear end of the arm is backed by an elastic cushion or spring, 79, and through the rear of the sliding box is fitted an adjusting-screw, 80, the forward part of which is journaled in a bearing, 81, and the end has fitted to it a bevel-gear, 82, which meshes with the gear on the vertically-arranged screw in the side bracket of the machine. It will thus be seen that the vertical adjustment of the bracket carrying the rollers and planer-head also gives adjustment to this chain by means of this pulley. A small tightening-pulley, 83, is hung to the frame and bears on the chain, as shown.

The letters B designate the chains which constitute the tensible chain-feed of the rollers. These are arranged on all of the feed-rollers, about the sprockets and neck of the feed-rollers, about the driving-sprocket, and the adjusting tightening-wheel. The arrangement of the chain is best shown in Fig. 4 of the drawings, on reference to which it will be seen that the chain rests on the driving-sprocket, thence across about the adjusting tightening-wheel, thence under the tightening-pulley, thence over the upper delivery feed roller, across under the same and about the under delivery feed-roller, thence across to the under first feed-roller, thence about the upper principal feed-roller to the driving-sprocket. This arrangement gives motion to the feed-rollers in unison with the adjacent faces moving in the same direction and with the same certainty as cog-gear, but with tensibility not found in cog-wheel feed. The peculiar adjustment of the chain on the feed-rollers imparts to them a synchronous revolution derived from the feed-sprocket, yet the stretching or giving quality of the chain permits them to check or give without the jeopardy and uncertainty accompanying a variable cog-gear. The upper feed-rollers being mounted in bearing-boxes arranged to move up and down in their seats, whenever the exigency occurs which lifts them or causes them to drop, the pressure is adjusted and the movements admissible by reason of the yielding movements of the adjusting-pulley, which will take up or give out any length of chain the vertical adjustment may demand. When the rollers are lifted or depressed by variances in the stock passing through the machine, the tension is accommodated thereto by the elastic element provided at the base of the stem carrying the adjustable tightening-pulley of the chains. The driving sprockets are located so that they may give the greatest weight force to the pull of the chain. The pull of the chain is up on the lower rollers and down on the upper rollers, thus pinching the stock between two surfaces moving in the direction for the cut. If the passage of the stock is impeded by any obstructions usual in the work, the force of the pull is increased—that is, the feed-power multiplies under the resistance more than the power of resistance in the stock.

Consequently the power of the feed is measured by the friction power of the belt that turns the machine or by the breaking strain of the chain.

5 The regulator of the feed is the adjustable tightening-pulley with yielding spring to give and take slack in the chain to suit unevenness in the stock, and is positively operated by the same mechanism which moves the brackets
10 with the planer-head and rollers, thus playing the chain to the rollers as they move apart. The tendency of the gear or sprocket that operates the chain is to coil it up if run slack on a heavy strain. Therefore this adjusting tight-
15 ening pulley is given this yielding motion both by the spring and by the positive adjustment of the screw.

In order that the chain may be guided with certainty to the sprocket, I fix a guide-shoe, 84,
20 (see Figs. 11, 12, and 16.) to the inner side of the side pieces of the machine. This guide-shoe consists of a bracket cast or secured to the side of the frame and formed with a projecting plate, 85, having a flange-piece, 86, secured to
25 its outer edge, and a cut-away part or groove, 87, in and through which the chain passes and by which it is guided and prevented from chocking or kinking.

It will be observed that the planer is ad-
30 justed to suit different thicknesses perpendicularly and runs on the same frame as the upper rollers, and one adjustment carries the planer, the upper rollers, and the pressure-bars simultaneously and in unison. Over the forward
35 pressure-roller is arranged a shield, 88, having cross-ridge 89, open in the middle. This not only serves as a shield to the roller, but as a binder for the arms in which the rollers are journaled. The tension screws of the boxes
40 are passed through the ends of the shield and hold it to the arms.

In Fig 13 I have shown a shield which sets over the rear upper roller and an auxiliary shield mounted thereon and which stands over
45 the planer-head. The object is to provide a cover for the roller and protection against flying chips. The shield 90 is formed with a longitudinal seat, 91, having a square edge, and on this seat a corresponding edge of the aux-
50 iliary shield 92 is arranged, the parts being secured together by hinges 93, as shown. The auxiliary shield is set on its hinges and the seat of the shield to stand of itself, as seen in the drawings, and may be turned back on the
55 shield; but to keep the auxiliary shield up in position I pivotally secure thereto a handle, 94, the end of which sets down on the shield and gives to the auxiliary shield a spring when anything tends to strike it back. This handle
60 94 serves the double purpose of a hand-grasp to throw the auxiliary shield up when back and to keep it in upright position. The ends of the shield have formed on them projecting ears 95, having bolt-holes and adapted to set
65 over and rest on the caps or covers of the boxes of the feed-roller, to which caps they are se-

cured by bolts or screws, as shown in the drawings.

The numeral 96 designates box-covers ar-
ranged over the boxes of the rear principal
70 upper feed-roller. These serve the double purpose of carrying the shield and shoe heretofore described and of carrying the rear or first pressure-bar. The plate 96 is screwed fast to
75 the loose journal-box of the roller, and has the ear of the shield screwed fast, as shown. On this plate is formed a vertical hollow sleeve, 97, having an annular shoulder at its upper end, and in the bore has a coil-spring, 98, dis-
80 posed. The pressure-bar 99 is formed with vertical end bars, 100, having their upper ends screw-threaded and provided with nuts 101. The vertical end bars are arranged in the hol-
low sleeve 97, and the nuts applied to their
85 projecting ends, and the pressure-bar thus held in position. The pressure-bar is here interposed because the board, when released from the grip of the rollers, has a tendency to jump and make the cut uneven; but with this bar
90 interposed the difficulty is removed and the stock proceeds without disturbance or defect. This pressure-bar should not drop below the under limit of the upper feed-roller, and to limit it in this respect I arrange its ends in the
95 guides or seats 28, formed in the adjustable brackets, the bottom of the guides being set to limit the face of the pressure-bar to about the line of the under or working face of the roller when down in its bearings. When the
100 roller is lifted, the pressure-bar is also lifted, and thus the bar does not become a medium of friction nor operative until the roller drops off the end of the stock, when the function of the bar is immediately brought in requisition and the stock held down and prevented from
105 being guttered by the knives. Between the planer head and the front upper roller is a pressure-bar, 103, which is adjustable. Both of these pressure-bars are carried by the brackets which bear the planer-head and upper
110 rollers.

The letters C and C' designate adjustable carrying arms, in the forward ends of which are mounted the vertical spindles of the
115 matcher-heads. The construction of these carrying-arms and their adjuncts, as originally conceived and constructed, are fully shown and described in the joint application for Letters Patent heretofore cited, and I make no claim
120 to them, as therein shown and claimed, in this application; but I have made certain differences of construction to adapt them to the present machine, which will be herein stated. These carrying-arms are duplicate in construc-
125 tion, and the same notations are used in reference to the elements or parts common to each. These carrying-arms extend from the rear end of the frame to well in front of the planer-head, as seen in Fig. 3 of the drawings, and consist of the main arm 104, provided with a
130 sliding bracket, 105, at its rear end, having a recess, 106, to set over the edge of the top

plate of the frame. (See Fig. 7.) To the outer edge of the sliding bracket is fixed an arm, 107, through the lower end of which and through the slot in the cross-piece of the frame is passed a shaft, 108, having its inner end journaled to the carrying-arm, as at 109. On this shaft is fixed a small gear-wheel, 110, which meshes with a gear-wheel, 111, mounted on a shaft, 112, journaled to the carrying-arm, as at 113 114. On the rear end of this shaft 112 is a smaller gear-wheel, 115, which meshes with a rack-bar, 116, secured against the face of the cross piece of the frame. A crank-arm is detachably fitted to the projecting end of the short shafts for operating the mechanism. The forward end of the carrying-arm is projected upward, as at 118, and formed with a flange, 119, which sets and slides in the channel 120 of the cross-piece 122, set across the frame to support these arms. On the under face of the cross-piece 122 is secured a rack-bar, 123, with which a gear-wheel, 124, on shaft 112, which carries this end of the arm across the machine parallel with the rear end, engages. From the inner flange-piece the carrying-arm is formed with a depending curved arm, 125, from which is an upward-turned piece, 126, formed with a diagonally-arranged flange, 127, with horizontal top, and provided with bolt-holes through which fastening-bolts are passed. To this flange 127 is bolted the corresponding flange of the bracket which carries the matcher-head spindle. This bracket consists of a single piece of metal formed with a depending arm, 128, terminating in a bearing, 129, in which the foot of the spindle is journaled, and the upper parts carrying the upper bearing, 130, for the spindle and formed with a horizontal top with flange 131 to set and slide in the channel 132 of the cross-piece. The spindles 133 are formed to take the matcher-head on the upper end, and are provided with a belt-pulley, 134. On the driving-shaft are pulleys 135 136, which are connected to the spindle-pulleys by belting, as best shown in Fig. 3 of the drawings. By turning the crank of either carrying-arm that arm is moved as desired to set the matcher-heads to a wide or narrow cut. When the cut is set, the arms are clamped by set-screws 137, let through the sliding brackets on the rear of the machine.

On the bed-plates is a gage bar, 138, secured to one of the carrying-arms at its ends and the parts over the slots between the bed-plates. This arrangement permits the carrying-arm, with the gage-bar attached, to be moved laterally over the bed plates without interference. When the carrying-arm is moved to the desired position, it is there held by turning down the clamping-screw in the sliding bracket.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the forward and rear set of feed-rollers of a planing-machine, the upper and forward rollers thereof being mounted in yielding bearings on a vertically-adjustable carrying-bracket having the planer-

head journaled therein, a single endless chain arranged on the necks of all the rollers, a driving sprocket to draw the chain and rotate the rollers in unison, and an automatic regulating-pulley to engage said chain and give and take up slack in the chain when the rollers are raised and lowered by the stock, substantially as described.

2. The combination of the forward and rear sets of feed-rollers of a planing-machine, the upper rear and forward rollers thereof being mounted in bearings on a vertically-adjustable carrying-bracket having the planer-head journaled thereon, a single endless chain arranged on the necks of the feed-rollers, a driving-sprocket to draw the chain and rotate the rollers, and an adjustable regulating-pulley having a yielding movement to take up any slack in the chain, and a positive horizontal adjusting device operated by the adjusting device of the vertically-adjustable bracket, substantially as described, and for the purpose stated.

3. The combination of the forward and rear sets of feed-rollers of a planing-machine, the upper rear and forward rollers thereof being mounted in bearings on carrying-brackets having the planer-head journaled thereon and arranged in guiding-flanges on the frame, vertically-supported adjusting-screws mounted on the sides of the frames with their threaded stems engaging threaded holes in the said brackets and having gear-wheels on their ends, a shaft mounted across the machine and provided with gear-wheels to engage the gear of the said screws, an endless chain arranged about the necks of the feed-rollers, adjusting or regulating pulleys mounted to slide in ways on the frame and provided with an elastic cushion to give resiliency to it in the slide, and an adjusting-screw having a gear-wheel to mesh with the gears on the vertical screws of the brackets, and driving-sprockets to draw the chain and rotate the rollers, substantially as described.

4. The combination, with a feed-chain, of two sets of feed rollers, moved in unison by said chain arranged about the necks of said rollers, one set of said rollers having sprocket-gear on their necks and the top roller of the other set having sprocket-gear on its necks and the bottom roller thereof formed with smooth channels about its necks, whereby when the upper roller is lifted the chain will correspondingly yield; substantially as described.

5. The combination, with the roller and planer-head carrying brackets and the rear top feed-roller having adjustable bearings in the carrying-brackets, of the pressure-bar arranged between the said top roller and the planer-head and supported by a bracket secured to the journal-boxes of said top roller, said supporting-bracket having a spring-connection to the pressure-bar, substantially as described.

6. The combination, with the upper feed-roller of a planing-machine, said roller being

mounted in vertically-adjustable bearings, of a pressure-bar carried by supports secured to the bearings of the said roller and a shield arranged over the roller and secured to the supports of the pressure-bar, whereby the roller, the shield, and the pressure-bar are lifted when the bearings are lifted, substantially as described.

7. The combination, with the upper feed-roller of a planing-machine, said roller being mounted in vertically-sliding bearings, of supports secured to said sliding bearings and a pressure-bar secured to the free ends of such supports, whereby the pressure bar is lifted by the roller and only presses on the stock when the roller drops off, substantially as described.

8. The shield herein described, consisting of the shield 90, formed to set over the feed-roller and formed with end ears, 95, to set over and rest on the covers of the boxes of the feed-roller, and having a square ledge or seat, 91, on its outer face, and the auxiliary shield 92, hinged to the shield and provided with a spring setting-handle, 94, substantially as described, and for the purpose specified.

9. The combination, with the driving sprocket-wheel and the endless chain, of the

guide-shoe 84, arranged under the chain and sprocket and consisting of a bracket fixed to the inner face of the side piece of the machine and formed with a projecting plate, 85, having a flange-piece, 86, secured to its outer edge, and a groove, 87, to guide the chain, substantially as described.

10. In a planing-machine, the combination of the upper principal feed-roller mounted in yielding bearings and the lower principal feed-roller mounted in stationary bearings, one of said rollers having sprocket-gear on its neck and the other roller being formed with a plane annular channel about its neck, an endless chain arranged about the sprocket-gear and in the channel of the necks of the rollers, and a sprocket-gear to move the chain and rotate the rollers, whereby said rollers may yield with the variances of the stock and be moved with variable speeds, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two attesting witnesses.

SAMUEL J. SHIMER.

Attest:

E. S. SHIMER,
JOHN A. BECK.