

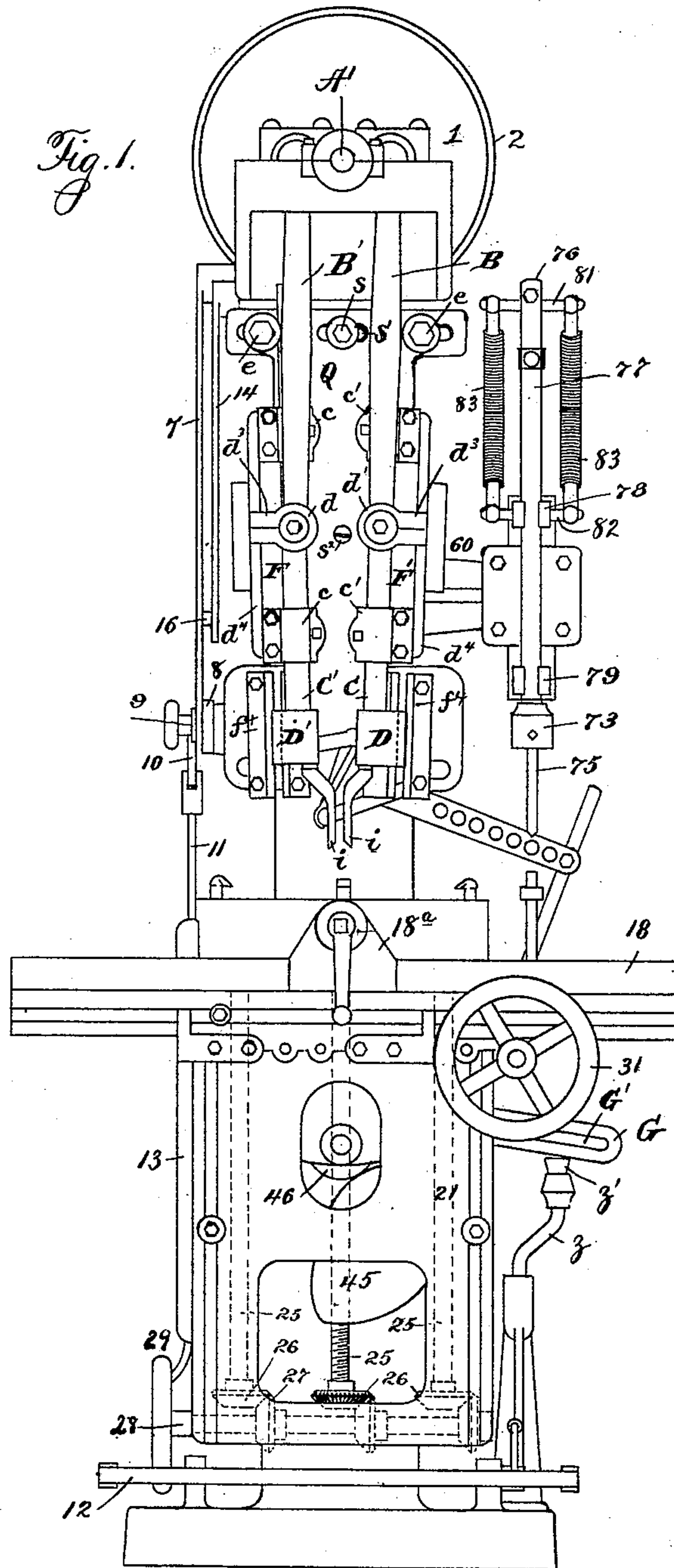
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6 Sheets—Sheet 1.

C. SEYMOUR.
MORTISING MACHINE.

No. 495,209.

Patented Apr. 11, 1893.



Witnesses:
G. F. Downing.
V. E. Hodge

Inventor.
Charles Seymour
By Leggett & Leggett
Attorneys.

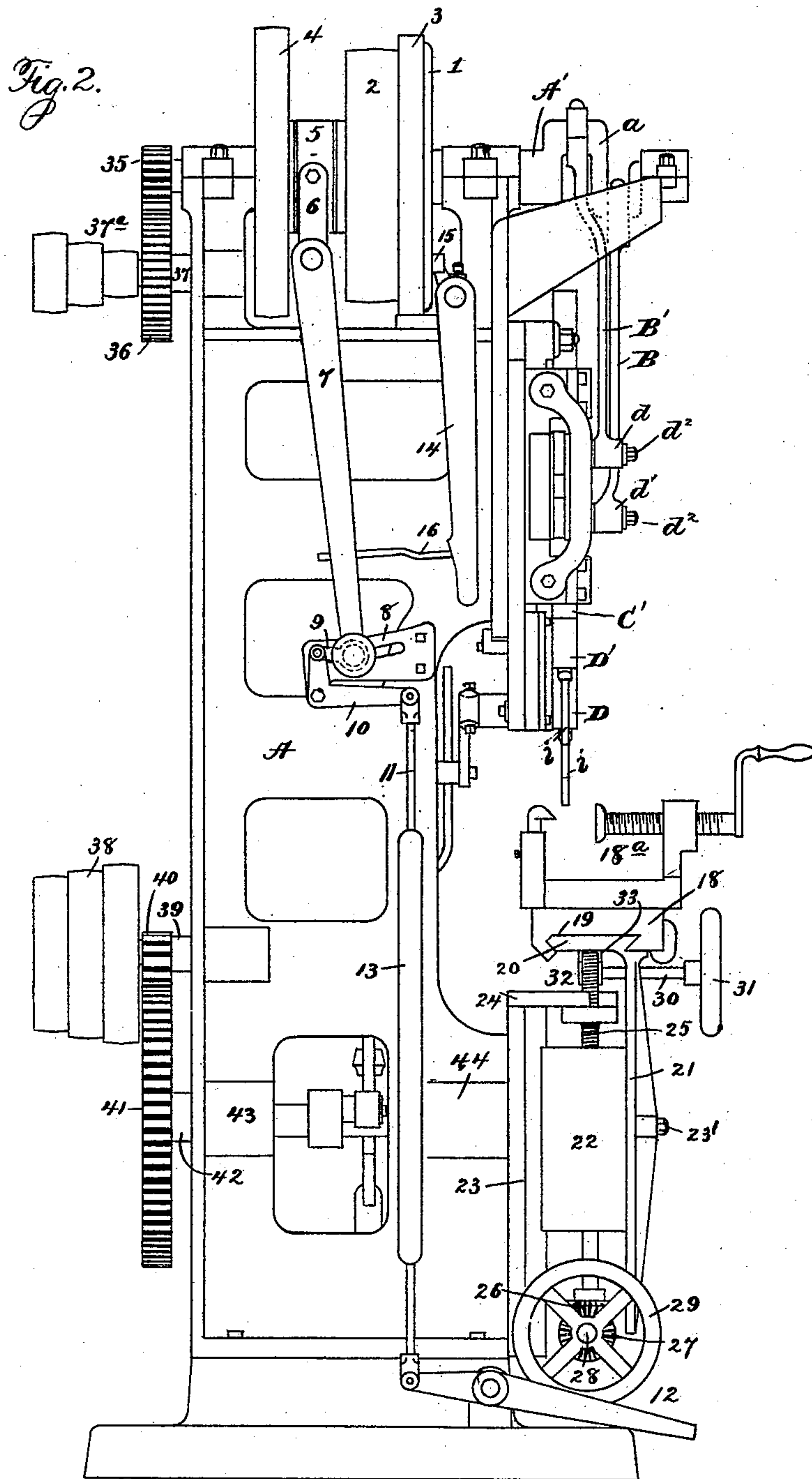
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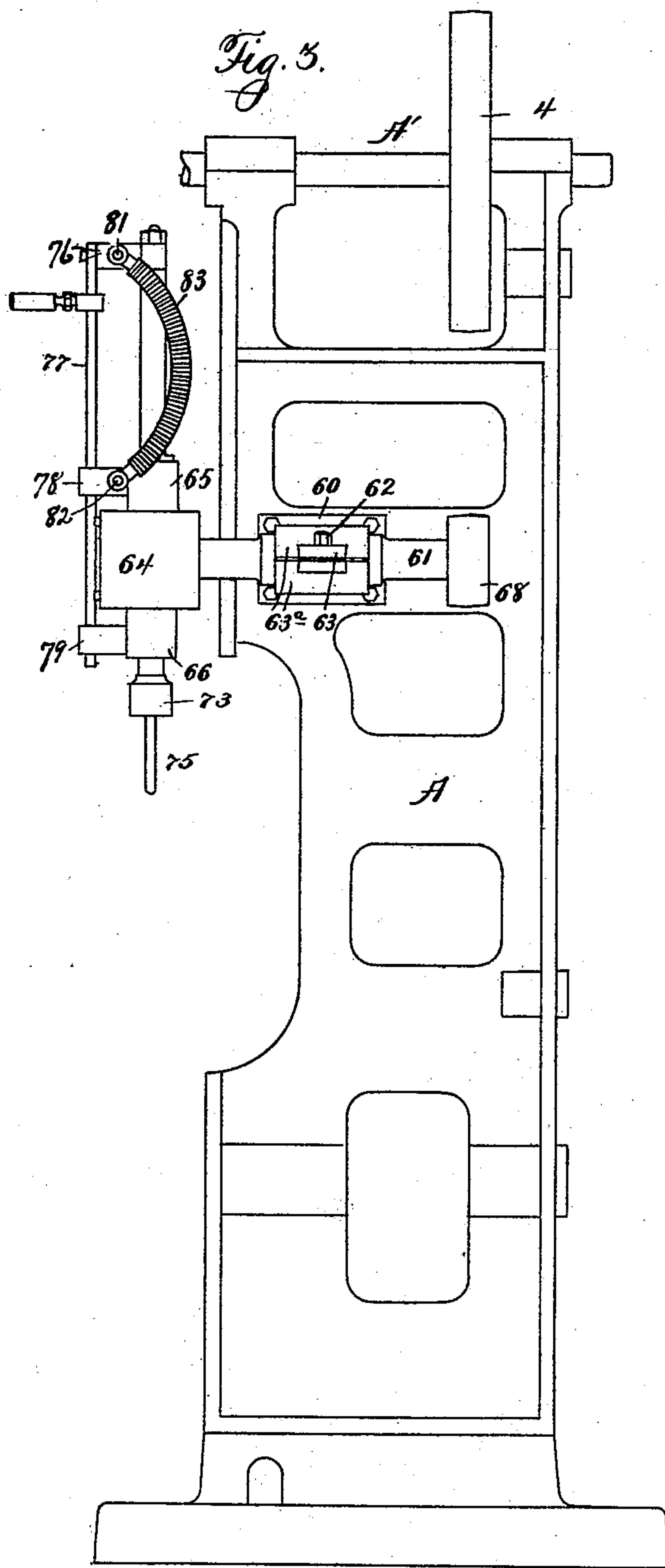
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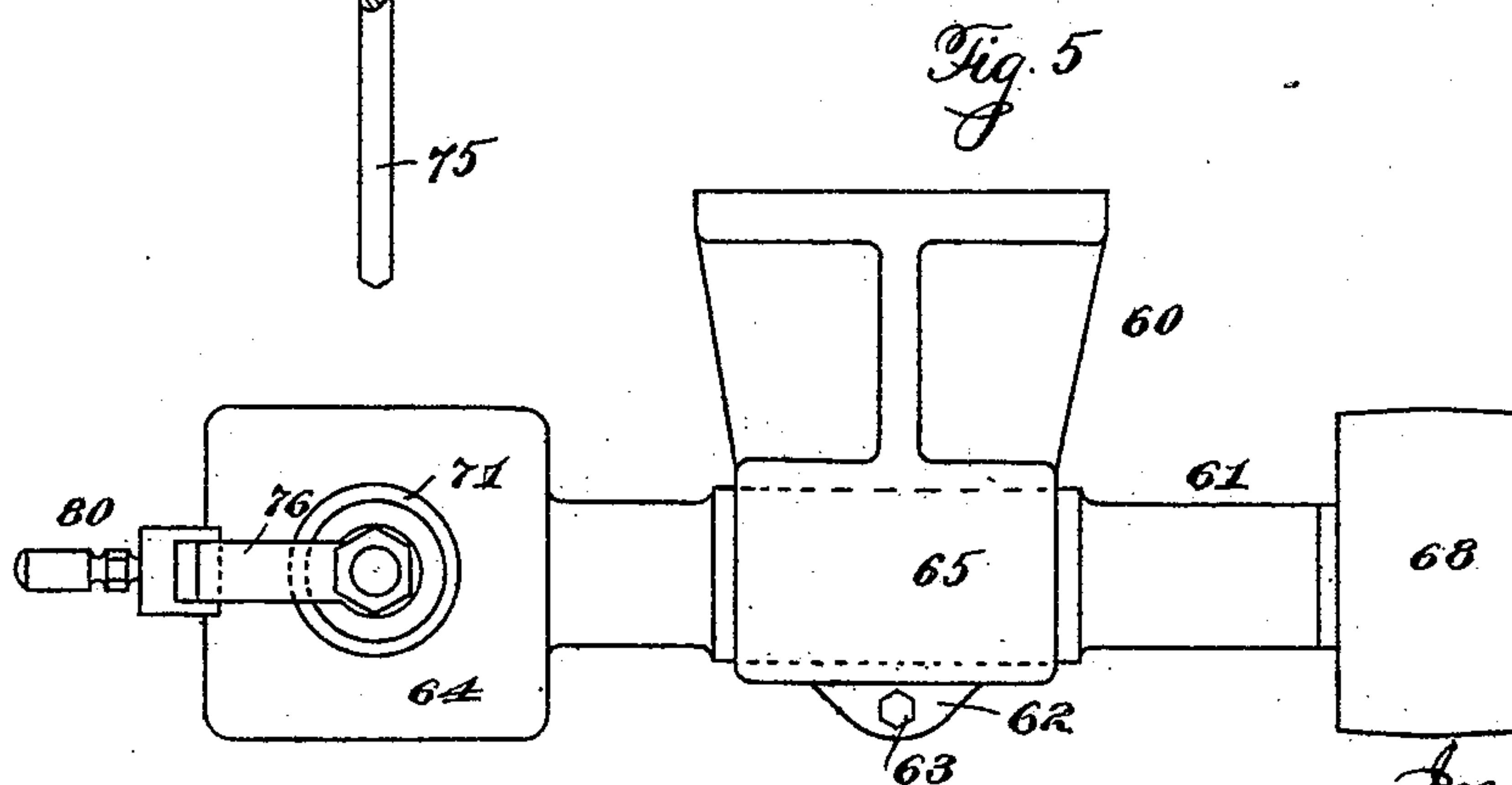
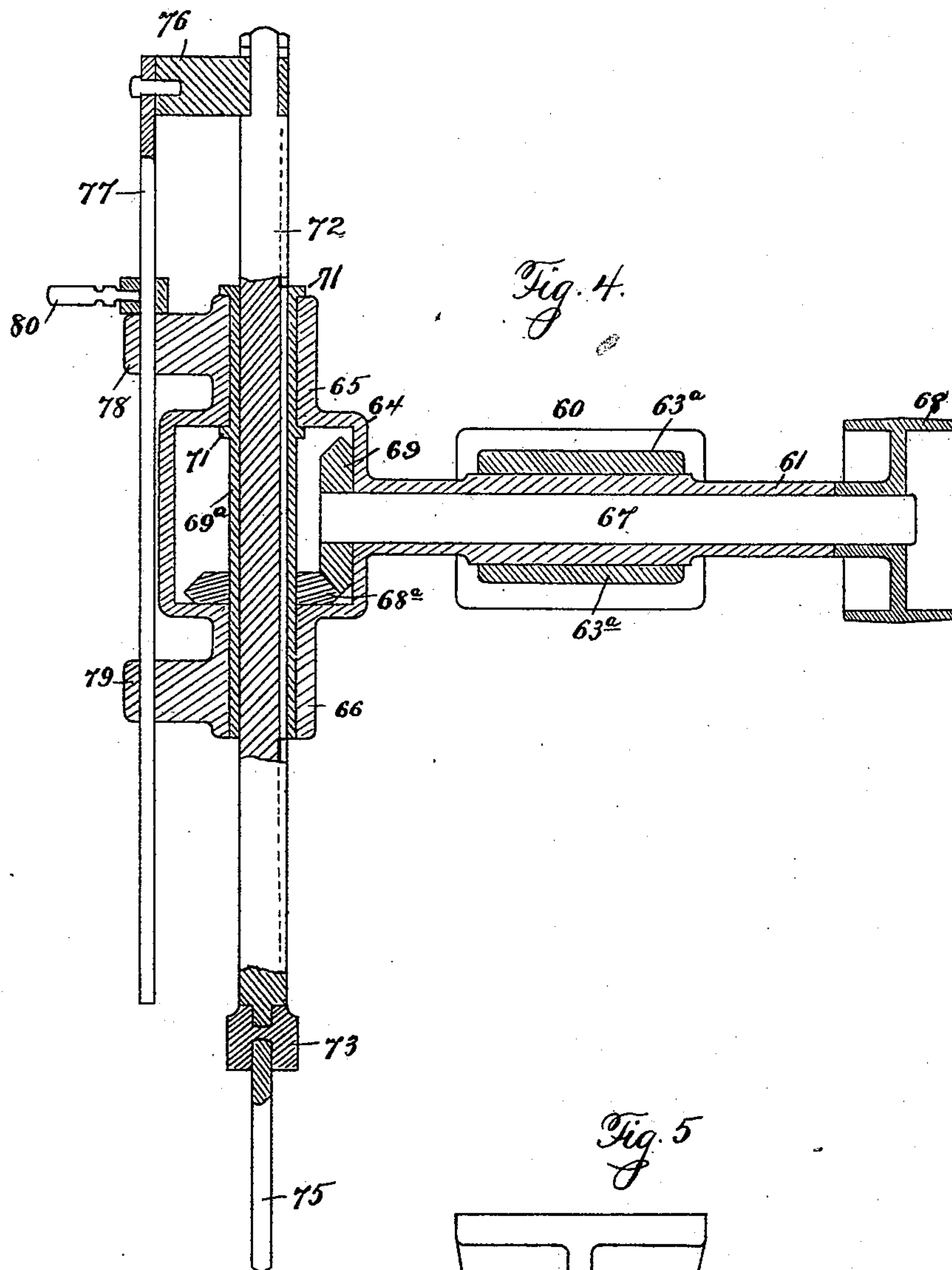
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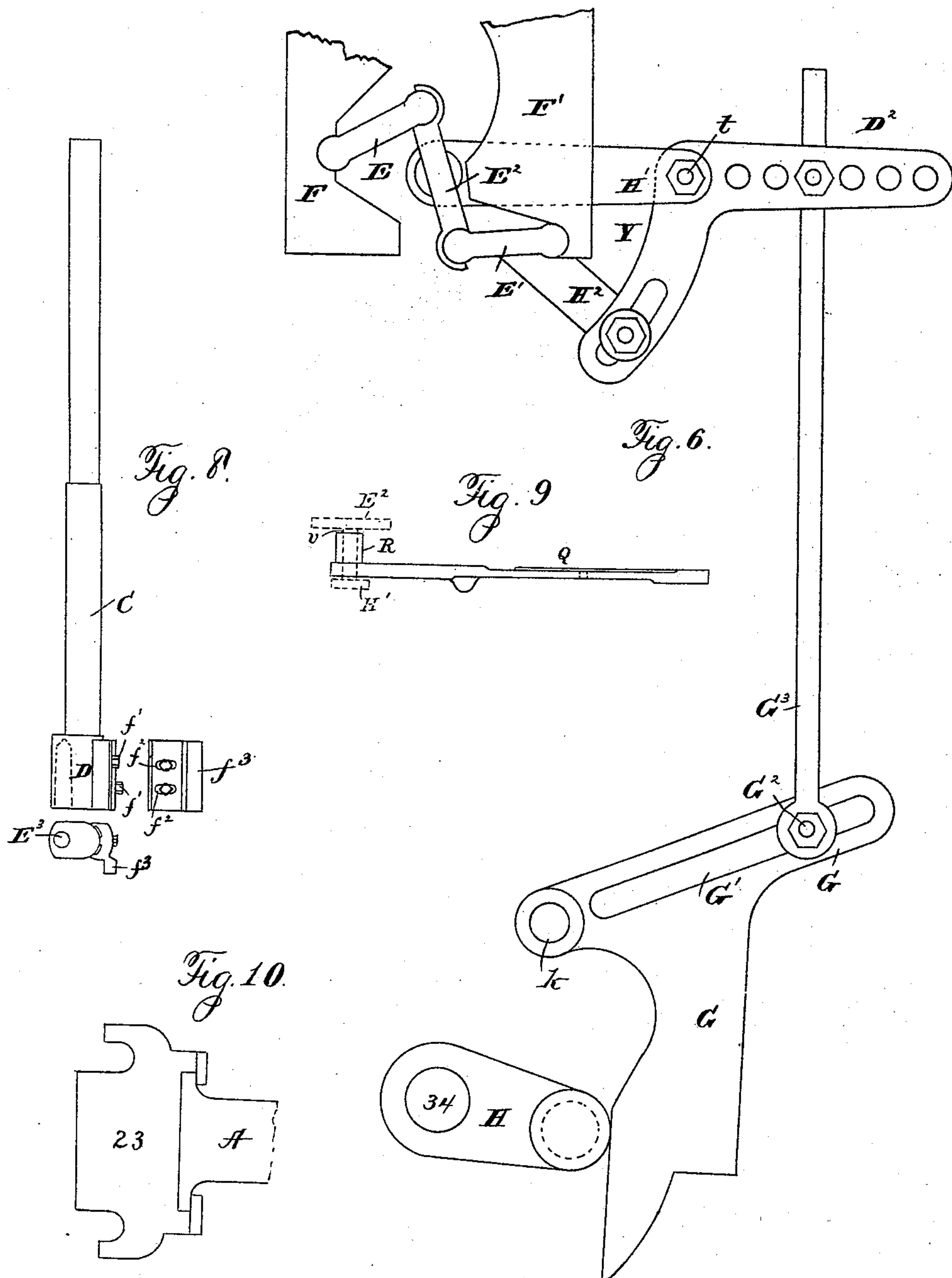
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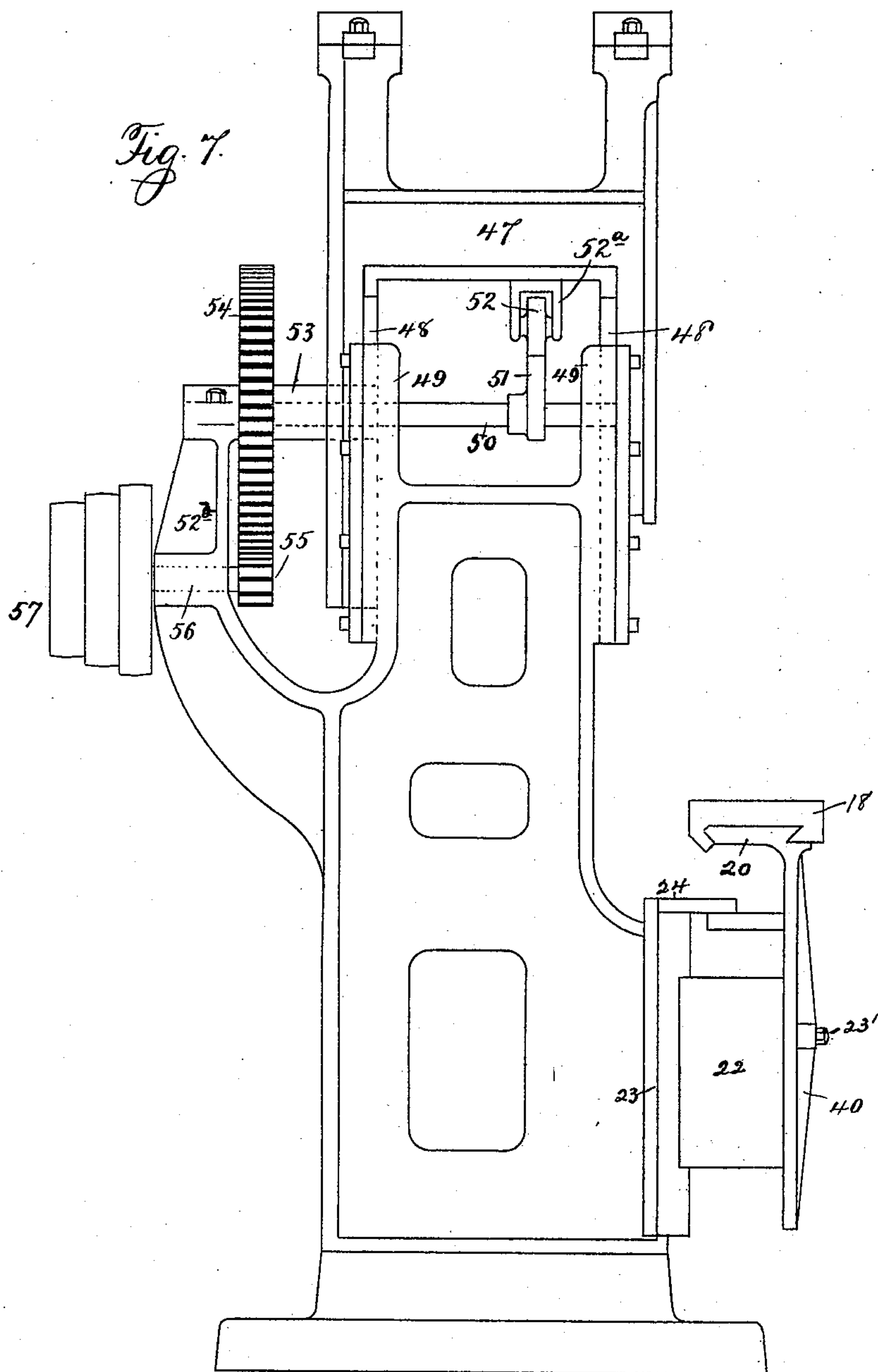
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6 Sheets—Sheet 6.

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UNITED STATES PATENT OFFICE.

CHARLES SEYMOUR, OF DEFIANCE, OHIO, ASSIGNOR TO THE DEFIANCE
MACHINE WORKS, OF SAME PLACE.

MORTISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 495,209, dated April 11, 1893.

Application filed February 25, 1892. Serial No. 422,812. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SEYMOUR, a citizen of Defiance, in the county of Defiance and State of Ohio, have invented certain new and useful Improvements in Mortising-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in mortising machines and more particularly to that class of such machines known as "double-chisel mortisers."

The object of the invention is to provide a mortising machine with devices, whereby said machine will be adapted to general carpenters' uses.

With this object in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings: Figure 1 is a front elevation of my improved machine. Fig. 2 is a left hand side elevation. Fig. 3 is a right hand side elevation showing the boring device attached to the frame of the machine. Fig. 4 is an enlarged sectional view of the boring attachment. Fig. 5 is a plan view of the devices shown in Fig. 4. Fig. 6 is an elevation of the parts for separating the chisels to produce the desired width of mortise. Fig. 7 is a view of a modification. Figs. 8, 9 and 10 are detail views.

A represents a frame, in the top of which a shaft A', having two crank arms a, a , is mounted and adapted to impart a reciprocating motion, by means of pitmen B, B', to chisel bars C, C', which latter are held in position by means of guides c, c, c', c' , upon the bed plates F, F'. The pitmen B, B' are attached to the chisel bars C, C' by means of wrists d, d' , in which the chisel bars are held by set screws d^2 , thus allowing of their being turned, raised or lowered, for the purpose of adjustment. Projecting from the wrists d, d' are flanged plates d^3 , which embrace and slide on flanged plates d^4 secured to the guides c, c' , and thus guide the chisel bars C, C', in their vertical movement. The bed

plates F, F' are adjustably pivoted to the bed plate Q at e and have a pendulous movement on said pivots, which is controlled by the parting mechanism hereinafter described. The bed plate Q is firmly but adjustably bolted to the frame of the machine by means of bolt s , passing through elongated slot s' in the bed plate and into the casing, and a bolt s^2 passing through the bed plate at a point between its ends and into the frame A. When it is desired to mortise at an angle to the perpendicular, the bolts s will be slackened and the bed plate permitted to have an oscillatory movement on the bolt s^2 as a pivot.

Attached to the lower ends of the chisel bars C, C' are heads D, D', to which the chisels i are secured in sockets E^3, E^3 . These sockets are preferably circular in cross section, with their axes parallel but not coincident with the axes of the chisel bars, as shown in Fig. 8.

A guide block f is adjustably secured in each head D, D', by means of screws f' passing through lateral slots f^2 , said guide blocks being provided with flanges f^3 , which slide between guide plates f^4 secured to the bed plate Q. By this means the chisels can be adjusted in their relative positions to each other by turning the chisel bars.

To the shaft A' a disk 1 of a frictional clutch, is keyed, and on said shaft A' in proximity to the disk 1, a pulley 2 is mounted, to which motion is imparted by means of a belt from any convenient and suitable source of power. The pulley 2 is provided with an annular flange or enlargement 3 at one edge, which is adapted to engage one face of the disk 1 and thus impart motion thereto, which motion will be transmitted, through the medium of the crank arms a, a , to the chisel bars C, C'. Another pulley 4 is mounted loosely on the shaft A' and adapted to have motion from the pulley 2, imparted to it through the medium of the clutch 5. Attached to the sleeve of the clutch 5 is a yoke 6, to which a lever 7 is attached, the lower end of said lever having sliding connection with a slotted plate 8 secured to the frame A, of the machine. Connected to the lower end of the lever 7 is a short link 9, the outer end of which is pivotally connected to the short arm of a

bell-crank-lever 10 pivoted to the plate 8. To the free end of the long arm of the bell-crank-lever 10, a vertical rod 11 is pivotally connected and the lower end of said rod is 5 pivotally connected to one end of a foot lever or treadle 12. The rod 11 is made with a heavy body portion 13 or an equivalent spring, so that when no pressure is applied to the treadle, the weighted rod or spring will tend 10 to force the clutch 5 into contact with the pulley 4, through the medium of the bell-crank-lever 10, lever 7 and yoke 6, and thus impart motion to a boring attachment hereinafter described. When the foot treadle 12 15 is pressed the flange 3 of pulley 2 will be thrown into frictional contact with the disk 1 and motion imparted to the chisels. A lever 14 is pivoted at or near its upper end to the frame of the machine or a bracket thereon, and is provided at its upper end, above its 20 fulcrum, with a brake 15 designed, by contact with the face of the disk 1 to arrest the motion of the shaft A' and thus stop the operation of the chisels. The levers 7 and 14 25 may be connected by a link 16, in which case both levers will be operated simultaneously. By unlocking this link connection, the levers may be actuated independently of each other as occasion may require.

30 In Fig. 6 the devices for spreading the chisels apart, while in the performance of mortising, is represented in detail. Pivoted at *k* is a bell-crank-lever G, with which a crank H, carried by a shaft 34, is adapted to 35 engage and actuate. The bell-crank-lever G is made with an elongated slot G', in which a pin G² carried by a rod G³ is adapted to have a sliding movement, said rod G³ being adjustably pivoted at its upper end to a bell 40 crank lever D² of a compound lever Y, which serves to actuate the parting mechanism of the chisel bars C, C'. In the operation of the machine, the chisel bars (the direction of motion of which is convergent) begin to cut 45 the mortise from opposite sides of the hole previously bored in the material, and are made to diverge gradually so as to obtain the proper length of mortise. This spreading or diverging of the chisel bars during their operation is produced by the lever Y, which, as 50 above described, is actuated by the bell crank lever G. The lever Y consists of three parts D², H² and H'. The link H' is pivoted at *t* to the bell crank D², while its other end, which passes 55 behind the plate Q, carries a pin *v*, which passes through a hollow stud R and has secured to its front end a cross bar E², to the ends of which are pivotally secured the links E', E', which also are pivotally connected to the plates F, F'. The link H² is adjustably 60 pivoted at *u* to the bell-crank D², while its other end is pivoted to the frame directly back of the stud R, which is the pivotal point of the link H'. It will be seen that if the bell-crank-lever G is actuated by the crank 65 H, the rod G³ will raise the lever Y, turn the cross bar E² upon its pivot R, and by means

of the links E, E' force the lower ends of the pendulous bed-plates F, F' apart, the chisel bars partaking of the same motion. After 70 the crank H parts its contact with the bell-crank G the parts above named will assume their original positions. A bumper *z* is located on the base of the machine, and is provided with a rubber *z'*, to take the strain off 75 of the bell crank lever G when the latter falls.

The machine is provided with a table 18 which supports a removable chuck or clamp 18^a for holding the material to be operated upon. The table 18 is provided in its under 80 face with a dove-tail groove 19 for the reception of a similarly shaped bed 20. The bed plate 20 terminates in a perpendicular portion or standard 21, which is adjustably secured to a block 22, by means of a screw 23', so that 85 the height of the table may be regulated to suit different thicknesses of material to be operated upon. The block 22 is secured to or made integral with an upright portion 23 having an arm 24 projecting at right angles to 90 the top thereof, said upright portion 23 being adapted to have a sliding vertical movement on guides on the main frame A. A series of screws 25 is passed through the block 22 and arm 24 and adapted to bear at their upper 95 ends against the bottom of the table bed 20. The screws 25 are provided at their lower ends with bevel pinions 26 which mesh with bevel pinions 27 mounted on a shaft 28, on the end of which an operating wheel 29 is se- 100 cured. By first loosening the screw 23' and then operating the wheel 29, the screws 25 will be forced against the under side of the table bed 20 and move the bed and parts car- 105 ried thereby upwardly for the purpose of adjusting the table to suit the thickness of the material to be acted upon. A shaft 30 is mounted in the upper end of the standard 21 of the bed 20, said shaft being provided at its outer end with a wheel 31 and at its inner 110 end with a pinion 32, adapted to mesh with a rack bar 33 secured to the under face of the table 18,—whereby said table may be moved longitudinally.

Keyed to the rear end of the shaft A' is a 115 pinion 35, which meshes with a gear wheel 36 carried by a shaft 37. A cone pulley 37^a is mounted on the shaft 37, over which a strap or belt passes to transmit motion to a cone pulley 38 carried by a shaft 39 mounted in the 120 lower part of the main frame A. The shaft 39 also carries a pinion 40, which meshes with a gear wheel 41 carried by a shaft 42, which latter is mounted in the frame A below the shaft 39. The shaft 42 is mounted in bear- 125 ings 43, 44 and on its front end a cam 45 is keyed. Interposed between the cam 45 and the substructure of the table is a friction roller 46, with which the cam 45 engages, where- 130 by the automatic raising and lowering of the table during the operation of the machine, will be accomplished.

In operating upon heavy timber, such as car sills and the like, in which the weight and

length would be too great to admit of their being raised to meet the action of the chisels, the construction shown in Fig. 7 will be effective. In this construction the upper part 5 47 of the machine which carries the chisels, will be provided with internal flanges 48 adapted to slide on ways 49 on the main frame of the machine, so that said part 47 can have a vertical reciprocating motion imparted to it. 10 A shaft 50 is mounted in the main frame and provided with a cam 51 adapted to engage a roller 52 carried in a bracket 52^a secured to the part 47,—thus imparting a vertical reciprocation to the said part 47. The shaft 50 15 projects at one end beyond the frame A and is journaled at its outer end in a sleeve 53 and in the upper end of a bracket 52^b projecting from the main frame A. The shaft 50 carries a gear wheel 54, which meshes with 20 a pinion 55 carried by a short shaft 56,—which latter is mounted in the bracket 52^b and carries a cone pulley 57, over which a belt (not shown) is adapted to run and thus transmit motion, through the medium of the gearing 25 above described, to the part 47.

As a mortise cannot be made in hard wood without previously boring a hole, a boring device is practically indispensable, and to thoroughly equip the machine to meet such cases, 30 I provide a boring attachment as shown in Figs. 3, 4 and 5. A bracket 60 is secured to the main frame A and embraces a sleeve 61, being made to securely hold said sleeve by means of a bolt 62 passing through lugs 63 35 projecting from the parts 63^a of the bracket. The parts or jaws 63^a of the bracket are so constructed that by loosening the bolt 62 the sleeve 61 can be turned, for a purpose presently explained. One end of the sleeve 61 40 terminates in a boxing 64, from the top and bottom of which sleeves 65, 66 project. Mounted in the sleeve 61 is a shaft 67, on one end of which a pulley 68 is secured and adapted to receive motion from the pulley 4 by means of 45 a strap not shown. The end of the shaft 67 within the boxing 64 is provided with a bevel pinion 69, which meshes with a pinion 68^a secured to a bushing 69^a passing through the box 64 and sleeves 65, 66. The bushing is 50 prevented from vertical movement by means of flanges or shoulders 71, 71. A shaft or spindle 72 passes through the bushing 69 and is connected to rotate therewith by means of a spline or feather or in any other suitable 55 manner. To the lower end of the shaft or spindle 72 a head 73 is secured, for the reception of a drill or boring tool 75. An arm 76 is loosely connected with the upper end of the shaft or spindle 72 so as not to prevent the 60 rotation of said shaft and projects laterally from said shaft or spindle. To the outer end of the arm 76 a rod 77 is secured, said rod passing loosely through arms 78, 79, projecting from sleeves 65, 66. A handle 80 is con-

nected to the rod 77, whereby the boring tool 65 can be properly fed downwardly. It will be seen that by loosening the bolt 62, the boring spindle can be inclined to right or left and a hole bored to meet the requirements of a mortise made at an angle to the perpendicular. 70

Passing through the arm 76 is a bar 81, a similar bar 82 also passing through the arm 78. Secured at their respective ends to the bars 81 and 82, is a series (preferably two, as shown in Fig. 1) of spiral, bowed springs 83, 75 which serve to balance the weight of the boring attachment and its adjuncts.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is— 80

1. In a mortising machine, the combination with reciprocating chisels and means for operating the same, of a table bed having a depending standard, a block to which said standard is adjustably connected, said block and 85 parts connected thereto, being adapted to slide on vertical ways on the main frame of the machine, screws passing through said block and adapted to bear on the table bed, bevel pinions on the lower ends of said screws, a horizontal shaft, bevel pinions on said shaft 90 adapted to mesh with the pinions on the screws, means for operating said shaft, a table mounted to slide on the table bed, a rack bar carried by the table and a pinion meshing with said rack bar, said pinion being provided with means for operating it, and means 95 for automatically reciprocating the table and the parts which carry it, during the operating of the machine. 100

2. The combination with a frame and mortising devices, of a bracket secured to said frame, a boring spindle carried by said bracket, an arm projecting from said spindle, a bar passing through said arm, an arm projecting 105 from the bracket, a bar passing through the last-mentioned arm, bowed springs connected at their ends to said bars and a rod secured to one of said arms and passing through the other loosely, substantially as set forth. 110

3. In a mortising machine, the combination with a main frame, of a vertically reciprocating frame, chisels and operating mechanism carried by said vertically reciprocating frame, a shaft mounted in the main frame, a cam on 115 said shaft, a roller carried by the vertically movable frame with which said cam engages, a gear wheel carried by said shaft, a short shaft, a pinion carried by said short shaft and meshing with the gear wheel, and a vertically 120 adjustable table, substantially as set forth.

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

CHARLES SEYMOUR.

Witnesses:

GEO. W. DEATRICH,
MAY E. FISHER.