

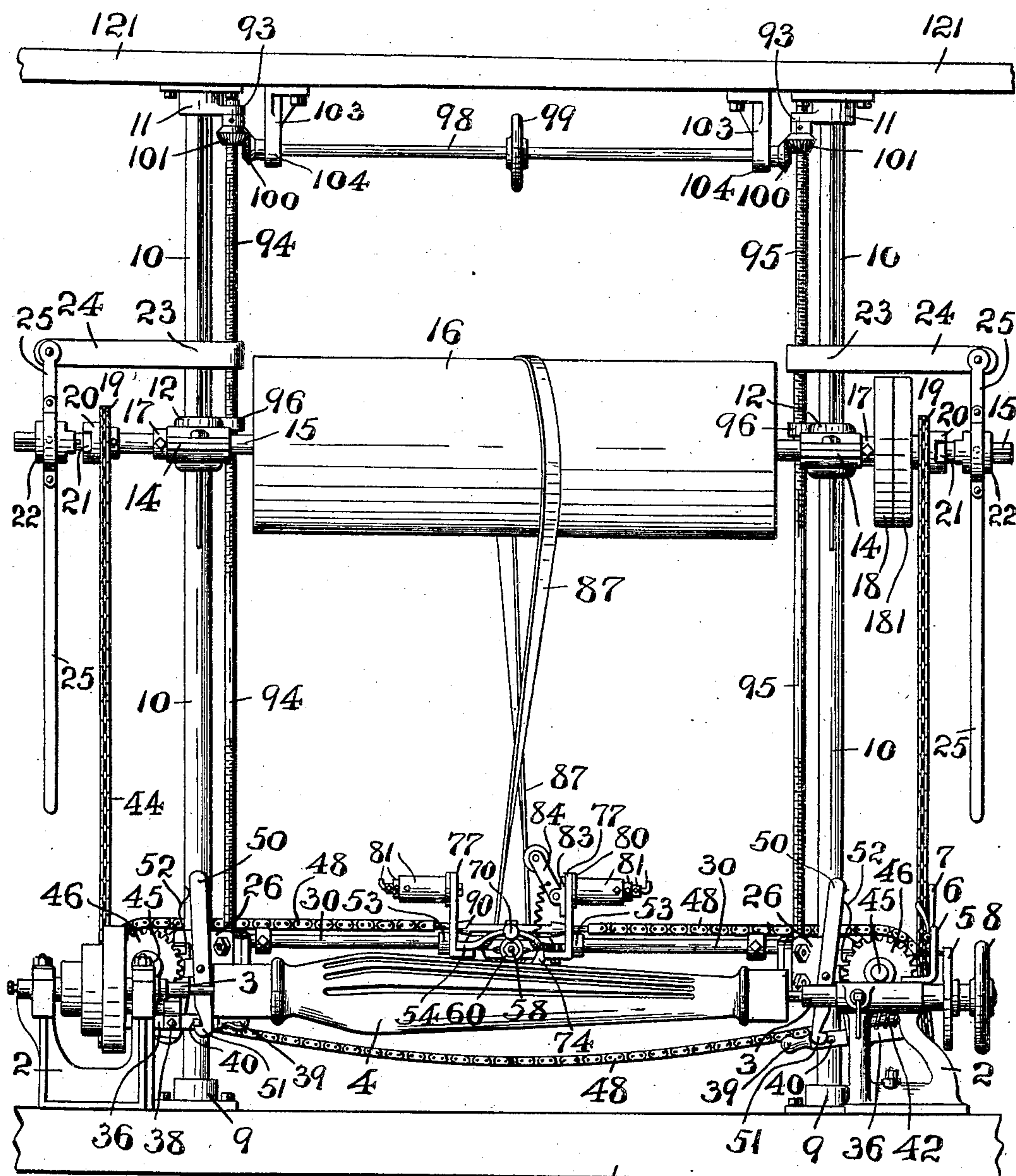
No. 879,571.

PATENTED FEB. 18, 1908.

J. NEILL.
MACHINE FOR FLUTING COLUMNS.

APPLICATION FILED OCT. 9, 1906.

5 SHEETS--SHEET 1.



WITNESSES:

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Anna H. Alter

INVENTOR:

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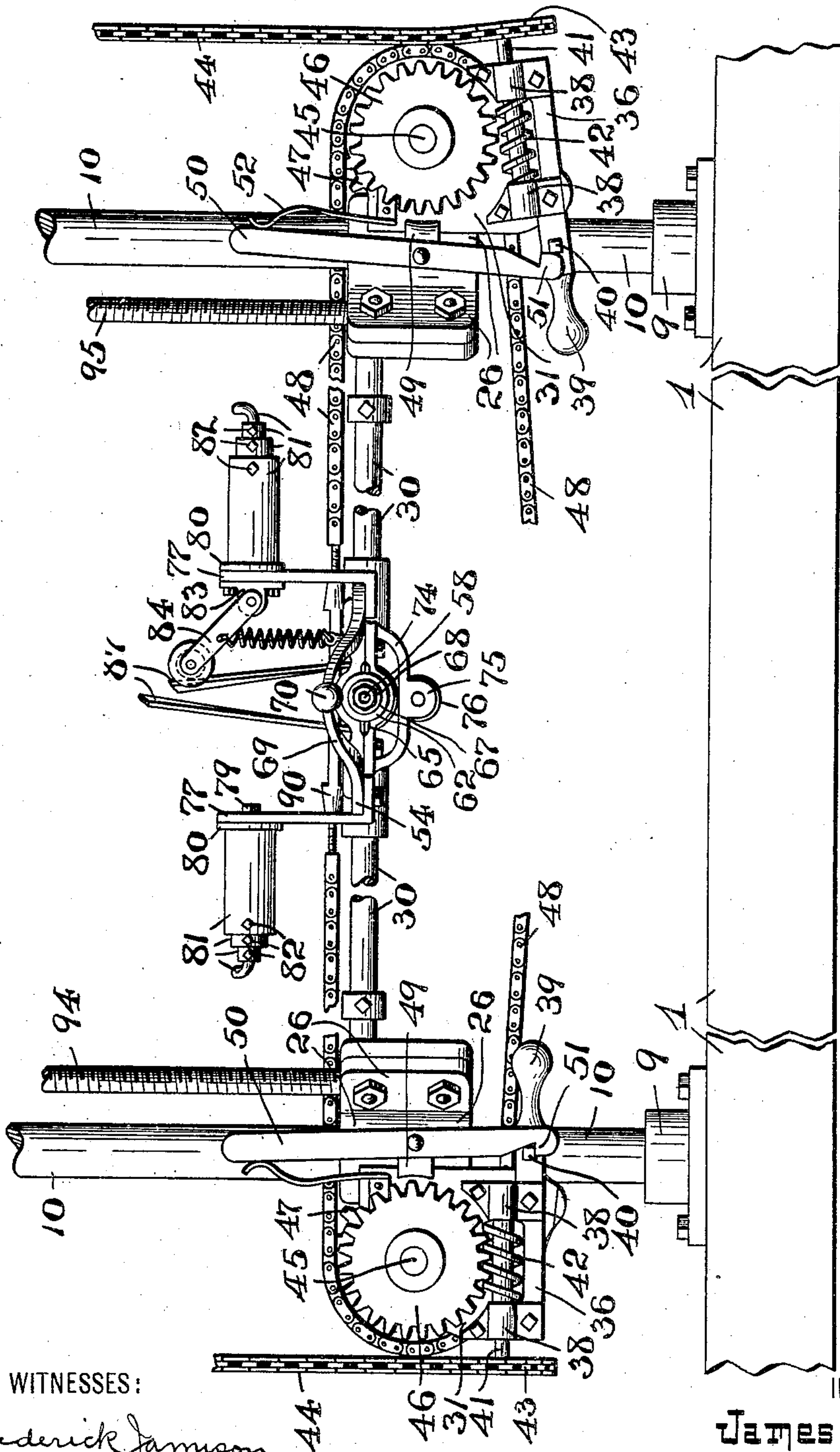


Fig. 2

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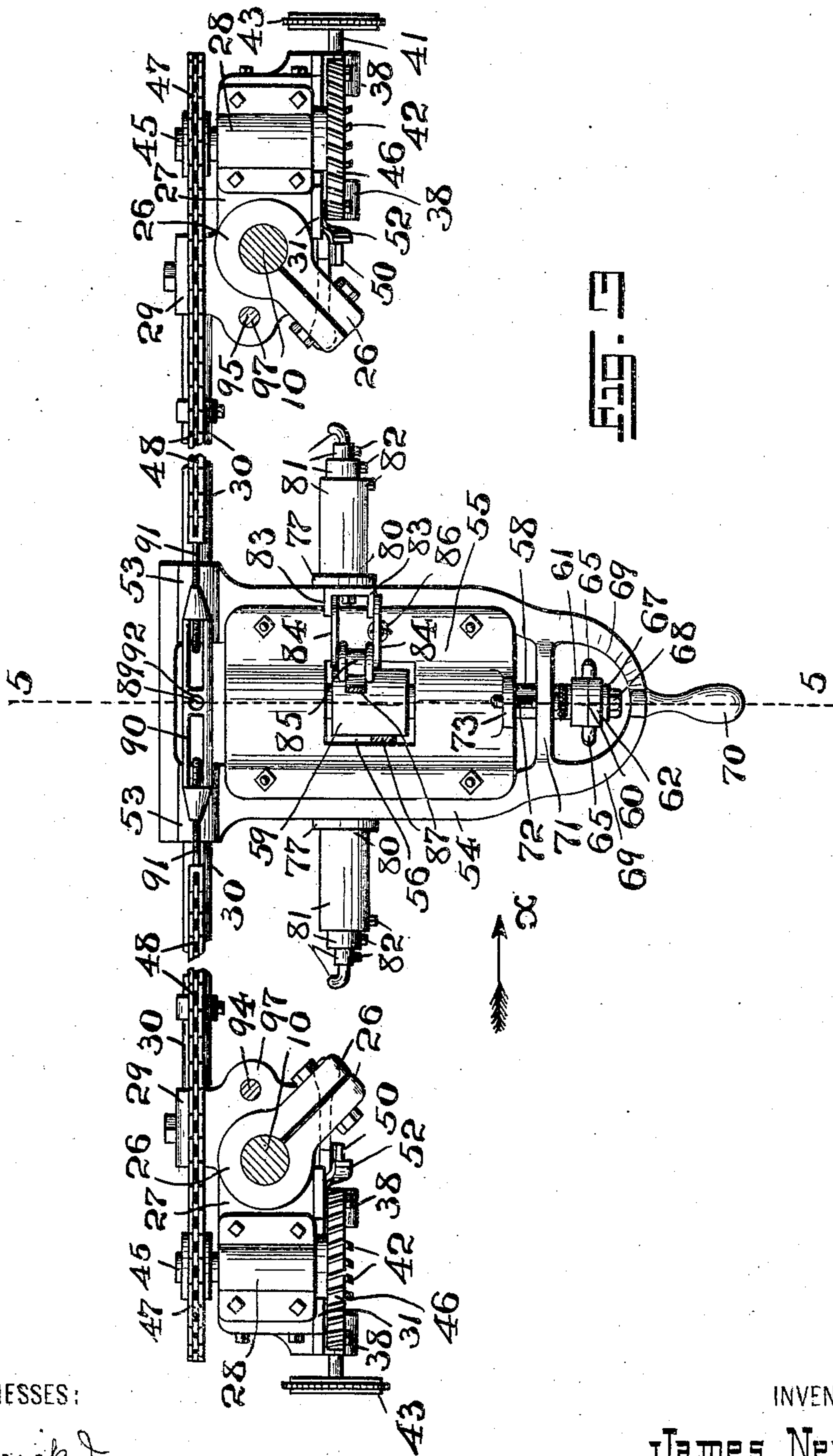
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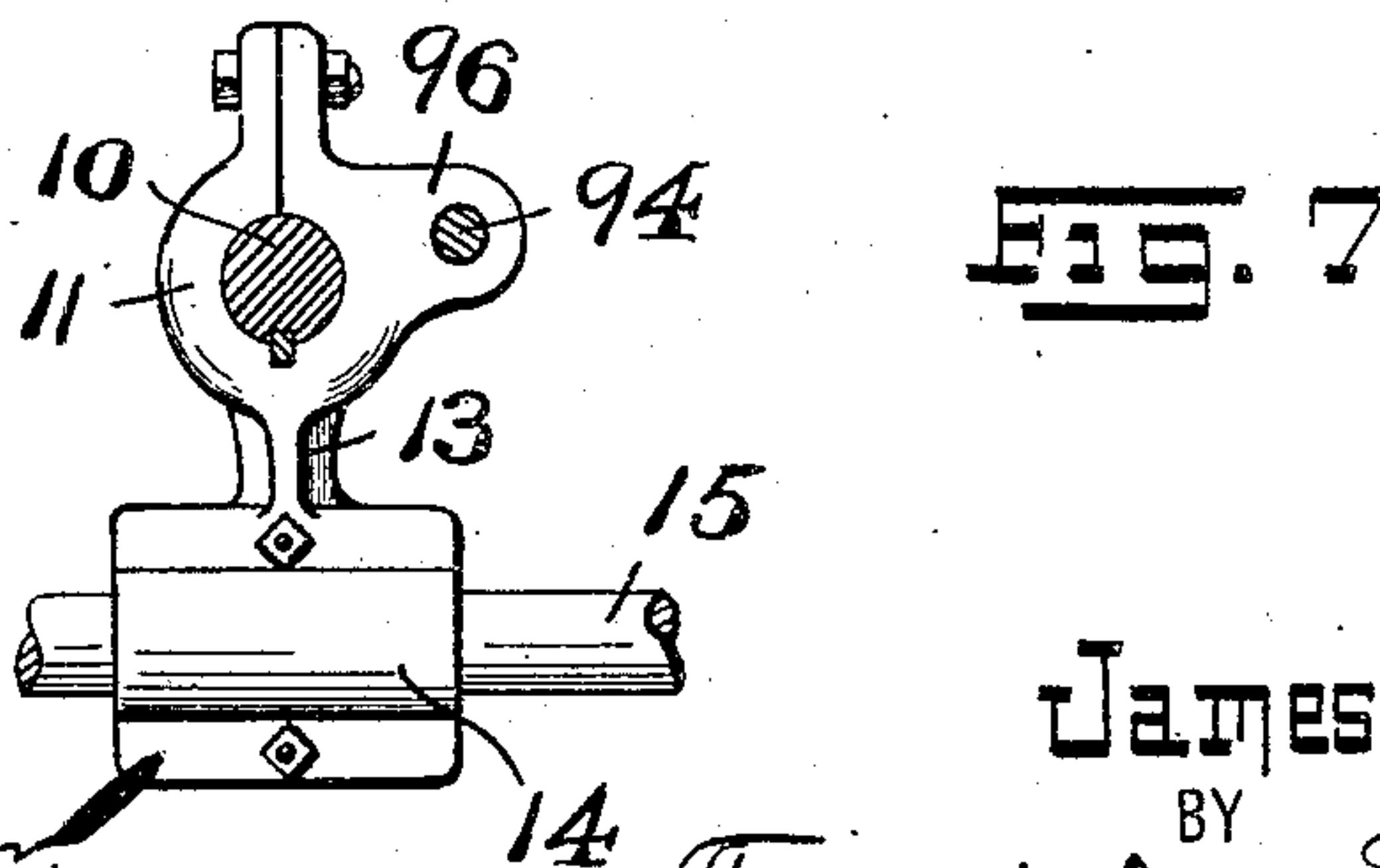
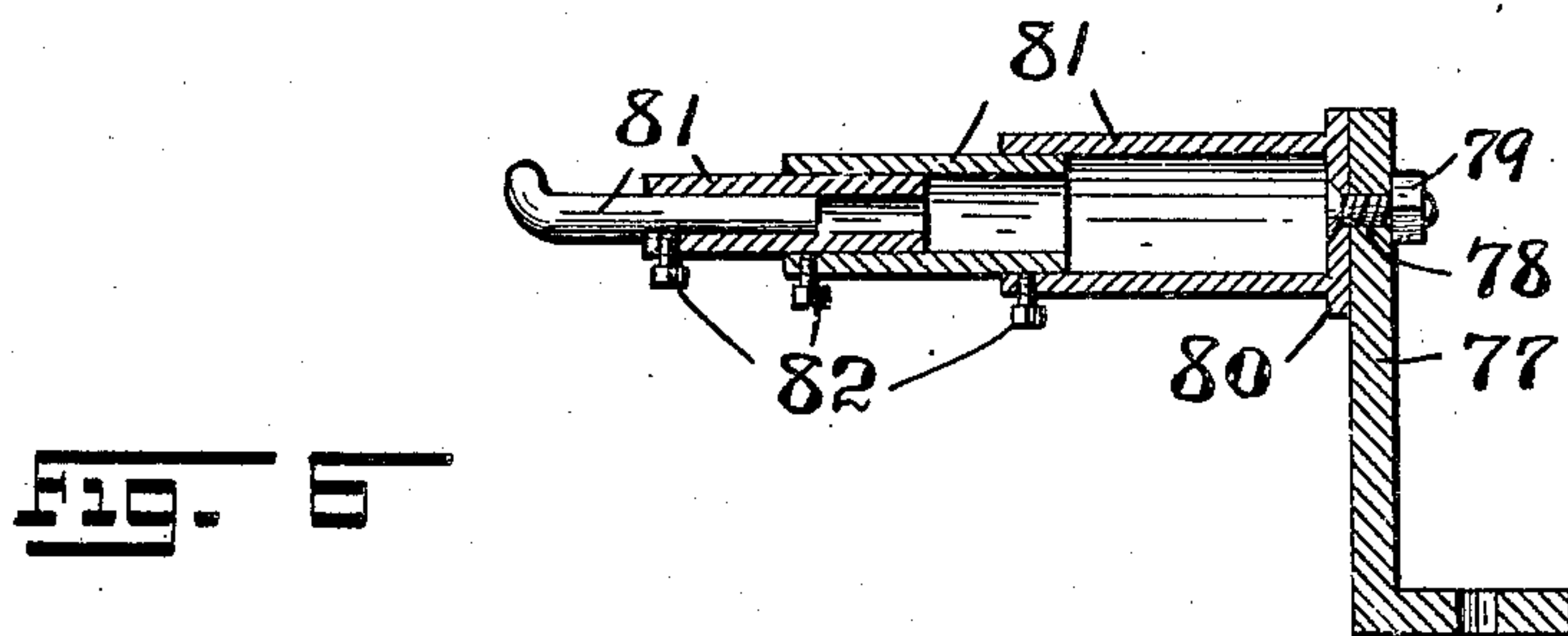
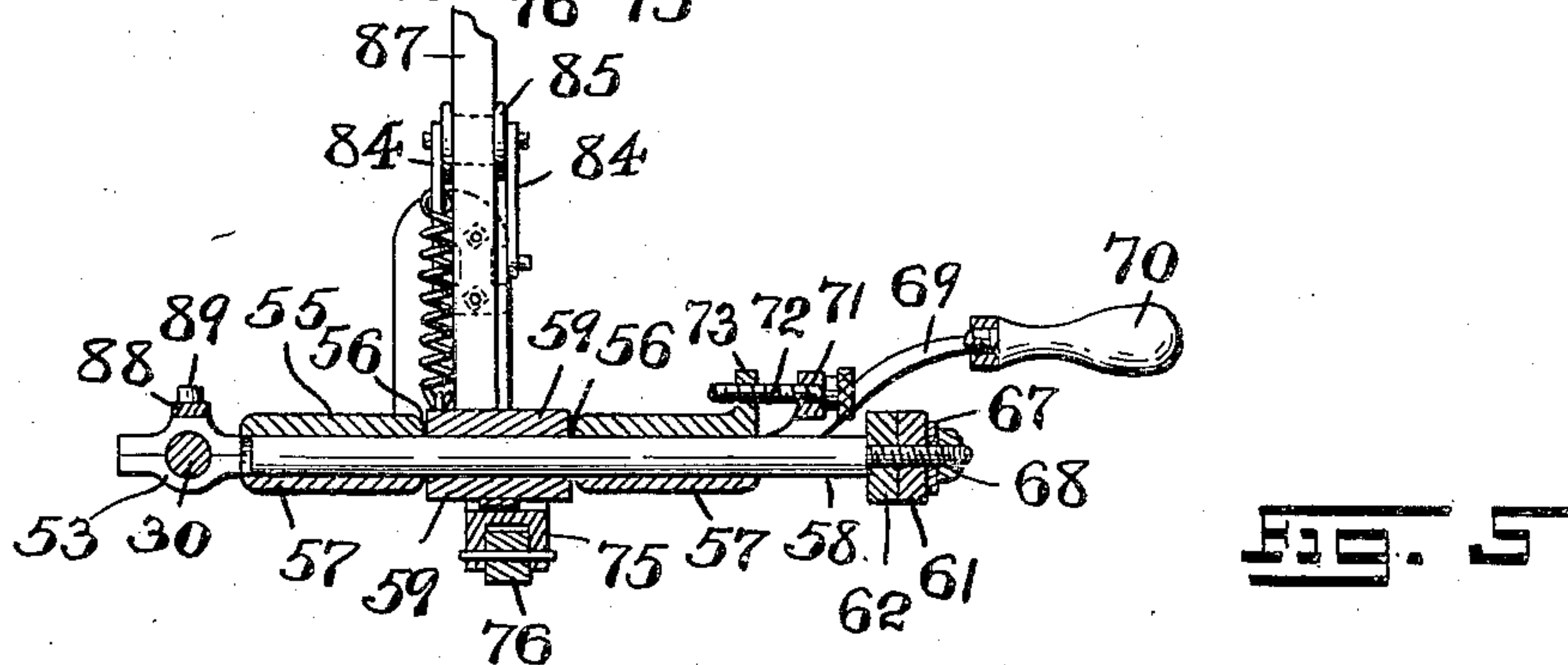
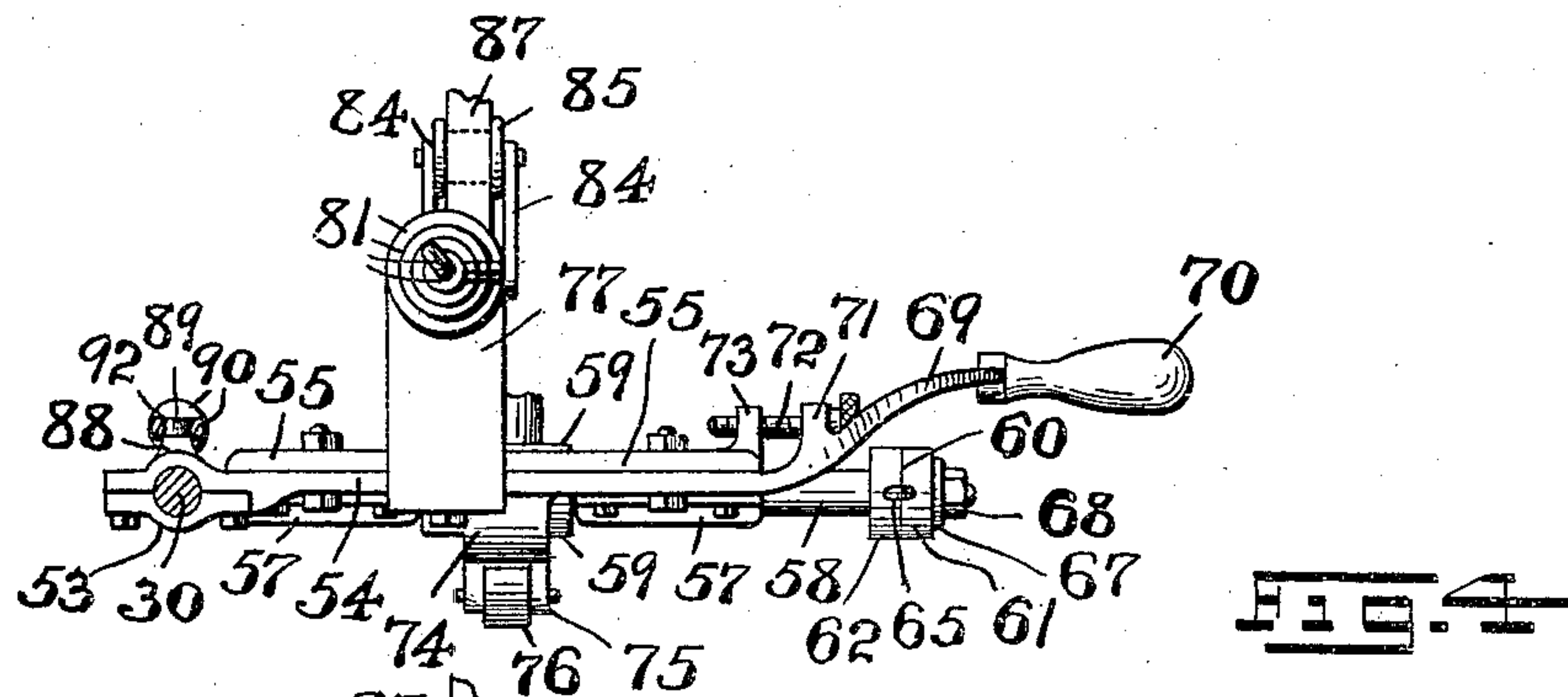
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5 SHEETS—SHEET 4.



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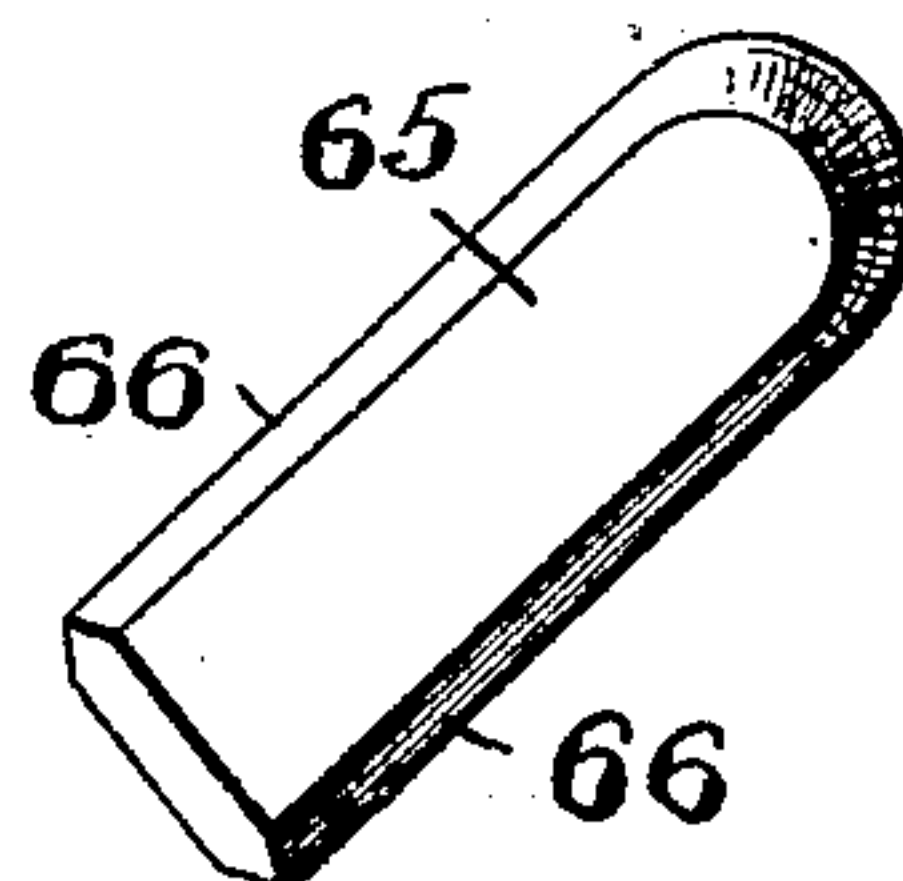
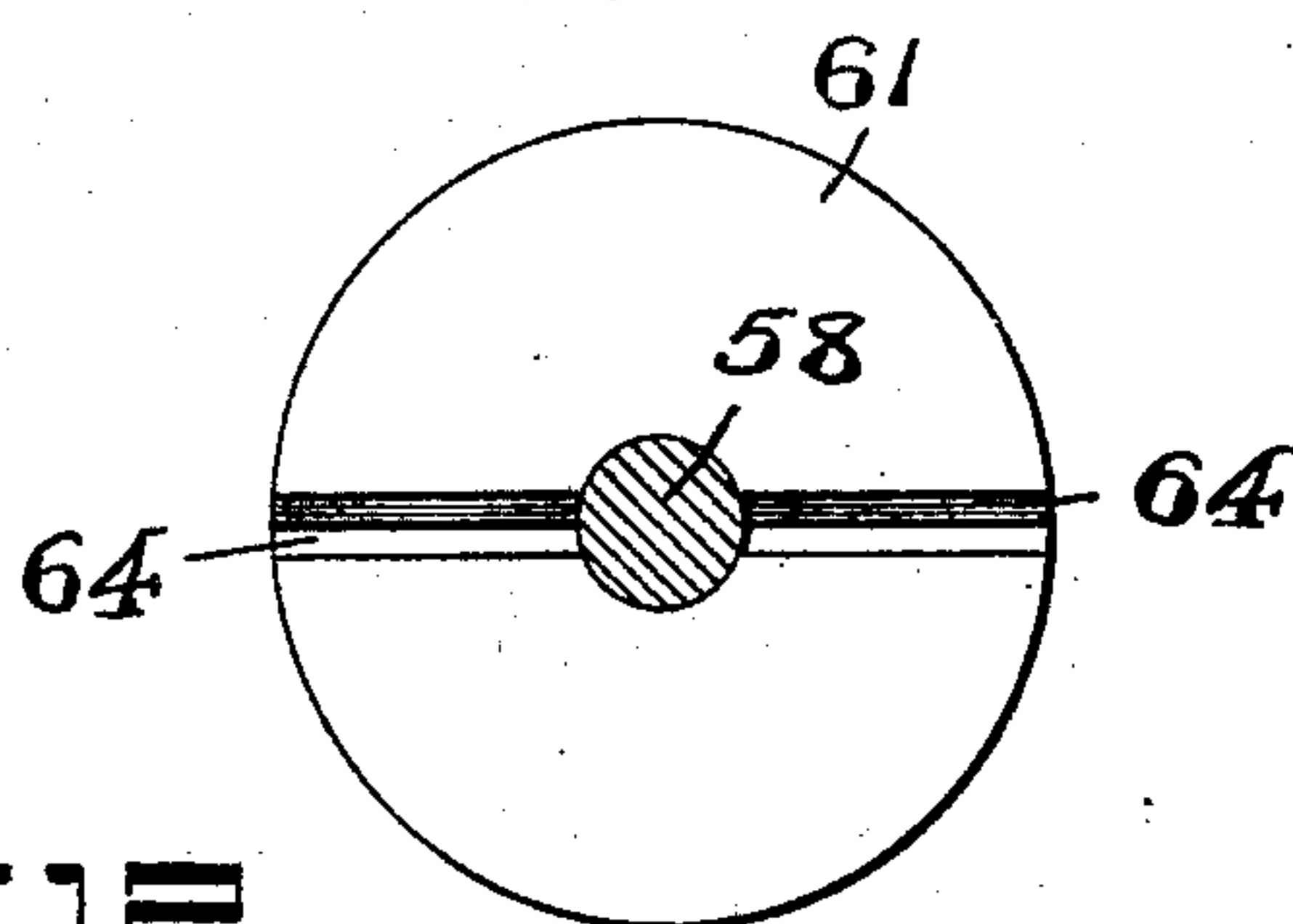
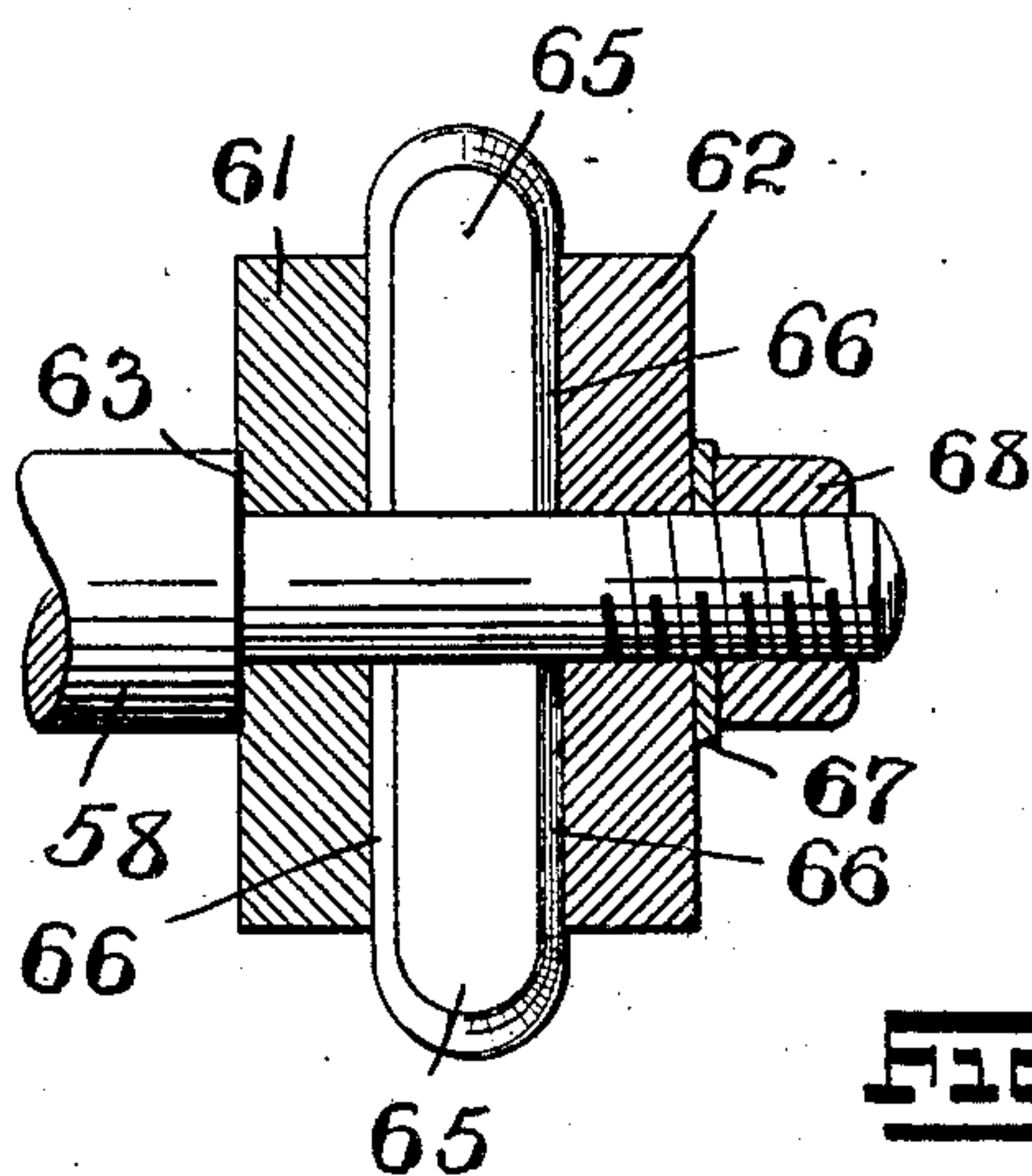
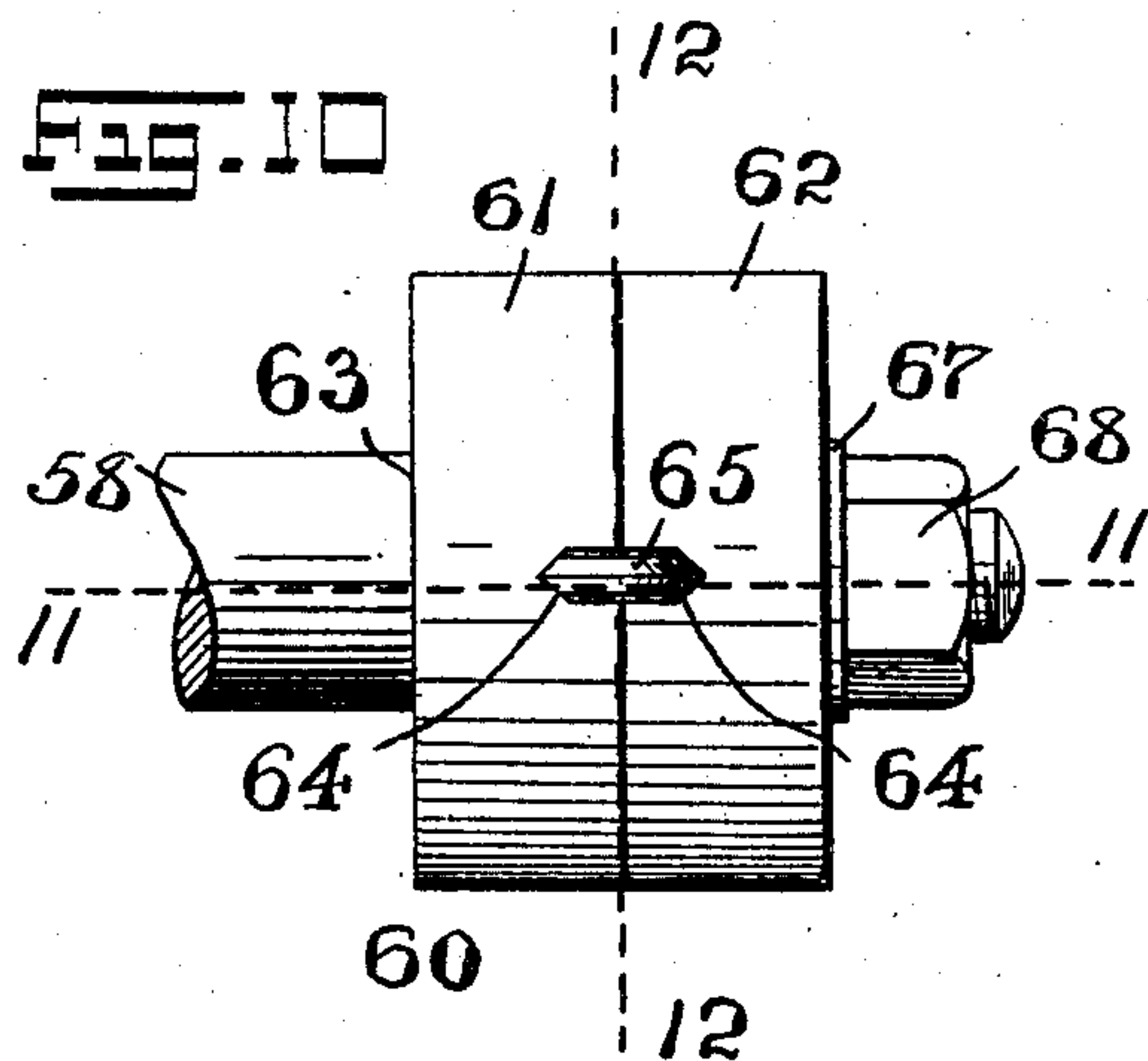
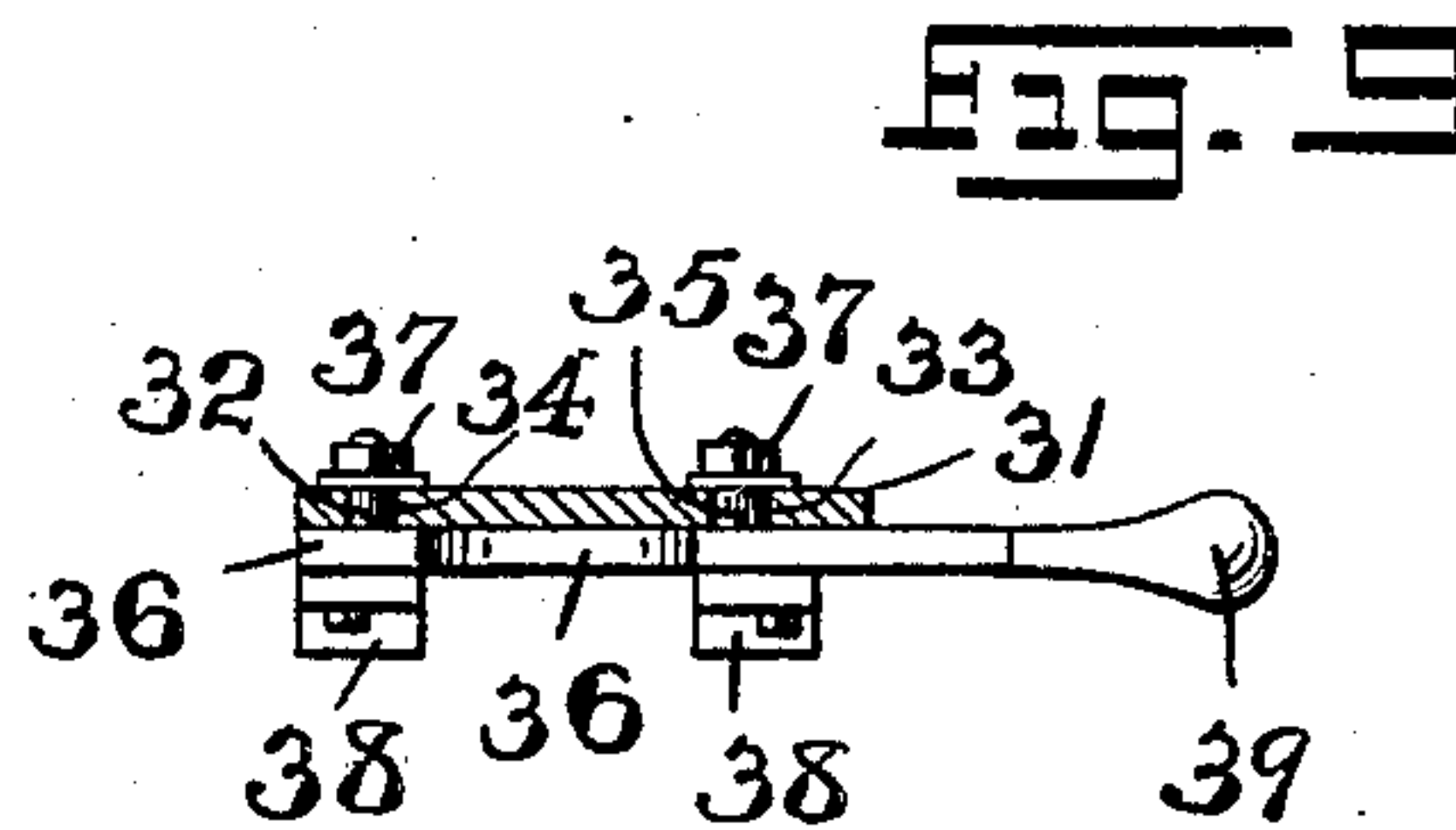
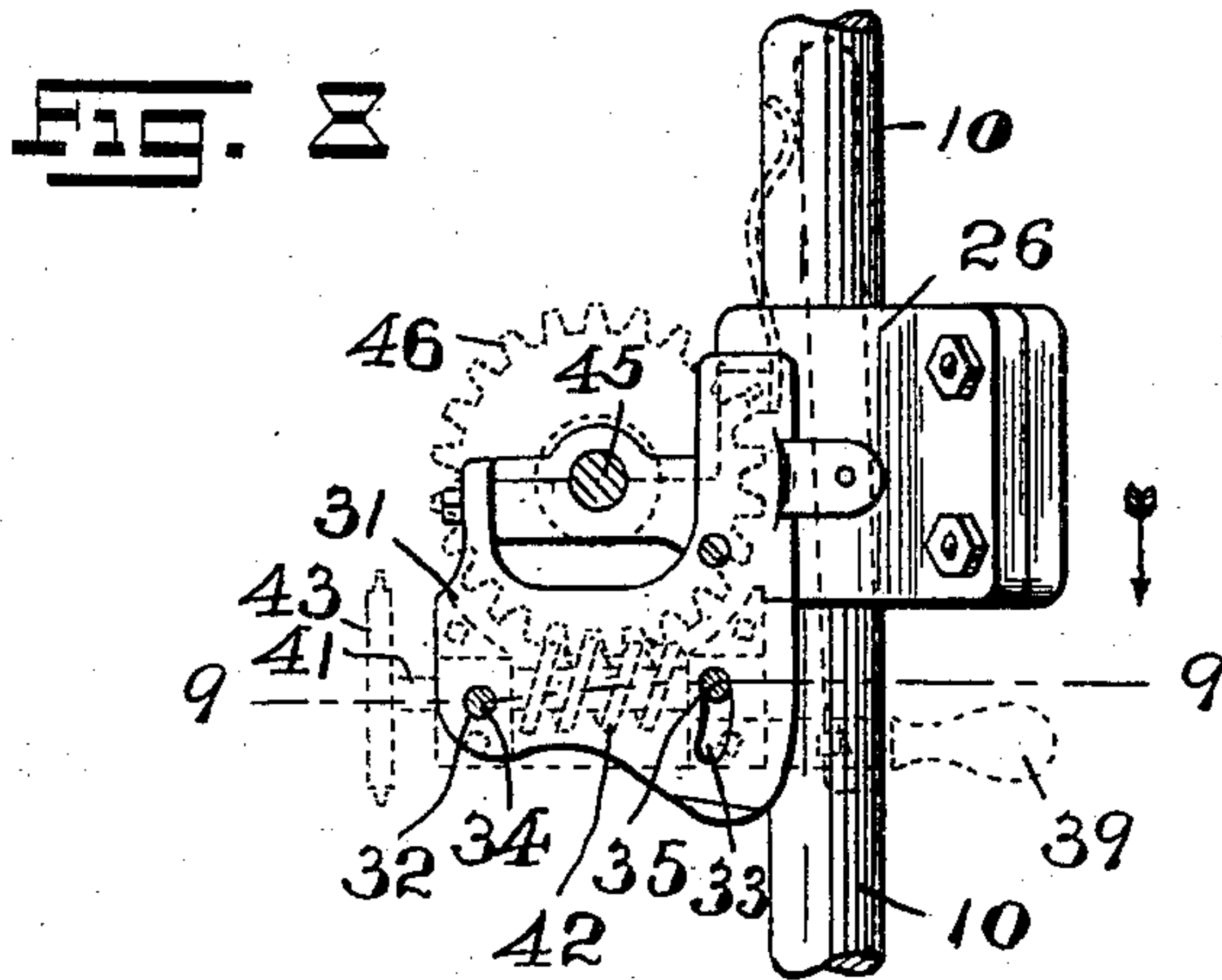
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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

JAMES NEILL, OF ORANGE, NEW JERSEY.

MACHINE FOR FLUTING COLUMNS.

No. 879,571.

Specification of Letters Patent.

Patented Feb. 18, 1908.

Application filed October 9, 1906. Serial No. 338,130.

To all whom it may concern:

Be it known that I, JAMES NEILL, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Machines for Fluting Columns; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The present invention has reference generally to improvements in that class of apparatus used in the manufacture of fluted columns for interior or exterior wood-work, balustrades, and the like; and the invention relates, more particularly, to a novel arrangement and construction of a movable or traveling cutting means, the same operating automatically to cut flutes in a column of any desired lengths and furthermore, will cut flutes in a column of any desired outside or surface conformation.

The invention therefore has for its primary object to provide a novel cutting or fluting mechanism of the general character herein-after set forth and a novel means for feeding the cutter or fluting device back and forth over the surface of the column during the cutting operation; and, furthermore, to provide means for automatically stopping the movement of the cutting means when a flute of the desired length has been made or cut in the surface of the column.

Another object of the present invention is to provide a means for adjusting vertically, the said movable or traveling cutting means and the mechanism for operating the same, to adapt the same for use in fluting columns of different and varying diameters.

Other objects of this invention not at this time more particularly mentioned will be clearly understood from the following detailed description of the said invention.

With the objects of the present invention in view, the said invention consists, primarily, in the novel mechanism for cutting flutes in columns and the like; and, the invention consists, furthermore, in the various novel arrangements and combinations of devices and parts, as well as in the details of the construction of the same, all of which will be

hereinafter more fully described and then finally embodied in the clauses of the claims, which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation of a fluting device or mechanism embodying the principles of the present invention, and illustrating, more particularly, its arrangement in conjunction with an ordinary turning lathe in which the column is held while the operation of the said device in cutting the flutes in the said column proceeds. Fig. 2 is a detail front elevation of the cutting means and the devices used for causing the same to travel or move in a reciprocatory manner over the column during the cutting operation. Fig. 3 is a plan view of the parts and devices illustrated in the front elevation in said Fig. 2. Fig. 4 is a side elevation of the cutting or fluting means and its carriage, looking in the direction of the arrow *x*, in Fig. 3. Fig. 5 is a longitudinal vertical section of the cutting means and its carriage, taken on line 5—5, in said Fig. 3, looking also in the direction of the arrow *x*. Fig. 6 is a detail vertical longitudinal section of an adjustable trip or release arm which is arranged upon the carriage of the said cutting means. Fig. 7 is a detail plan view of one of a pair of slidable bearings adapted to carry the main driving shaft of the device. Fig. 8 is a front elevation of one of a pair of slidable bearings adapted to carry the shifting or feeding mechanism of the cutting means, the parts mounted thereon being indicated in dotted outline. Fig. 9 is a cross-section of the same, said section being taken on line 9—9 in said Fig. 8, the worm-bearings shown in dotted outline in said Fig. 8 being illustrated in full lines in this figure. Fig. 10 is a side elevation of the cutter or fluting device; Fig. 11 is a vertical longitudinal section of the same, taken on line 11—11 in said Fig. 10, the knives of the cutter being shown in elevation; and Fig. 12 is a cross-section of the same, said section being taken on line 12—12 in said Fig. 10, the knife-blades being removed in this view. Fig. 13 is a perspective view of one of the knife-blades of the cutter.

Similar characters of reference are employed in all of the said above described views, to indicate corresponding parts.

Referring now to the said drawings, the

reference character 1 indicates a suitable base, such as a bench, table, or the like, upon which is secured the usual members 2 of a wood turning lathe, of any well-known and desirable construction, and held between
 5 said lathe-members 2 by means of the usual chucks or the spindles 3, is a turned column 4. One of said members 2 at one end of the lathe is provided with the usual hand-wheel 8, and with a graduated perforated disk 5,
 10 said disk being secured to the spindle 3. A lock-pin 6 engages with a perforation in the said disk 5 and locks the said column against turning, said pin 6 being actuated for withdrawal from the perforation in the disk
 15 by means of a pivot-device 7. The perforations of the disk 5 are arranged so as to correspond in number to the number of flutes desired to be cut upon the column, the latter being intermittently shifted or turned
 20 around to present its surface at intervals to the cutting means so that it may be provided with flutes equi-distant from each other, all around its outer surface of the column.

25 Secured upon the base or bed 1 and back of the lathe-members 2 are a pair of retaining sockets or bearings 9 in which are mounted the lower ends of a pair of vertical shafts 10, said shafts having their upper portions ar-
 30 ranged in a pair of sockets or bearings 11 which are secured to a cross-beam 121 of the ceiling or other suitable place. Slidably arranged upon each shaft 10 is a main bearing 12 which is provided with a forwardly-ex-
 35 tending portion or arm 13 carrying an auxiliary bearing 14, substantially of the construction indicated in Fig. 7 of the drawings.

40 Mounted in the auxiliary bearings 14 of the main-shaft bearings 12, is the main or driving-shaft 15. Secured upon the said main or driving shaft 15 and between the bearings 14 is the extra wide-pulley wheel 16, collars 17 being suitably secured in fixed
 45 positions upon said shaft 15 to retain the shaft and its long pulley in their proper rotary positions between the bearings 14, as will be clearly evident. Upon one end of the main or driving-shaft 15 are a fast pulley
 50 18 and a loose pulley 181 over which may be arranged the usual belt which serves to impart motion to the main or driving shaft 15 from an outside source of power. Loosely
 55 arranged upon each end of the main or driving-shaft 15 is a gear or sprocket wheel 19 provided with a hub 20 in which are clutch-receiving sockets 21, and slidably arranged upon the main or driving-shaft 15 and adapted to turn therewith is a clutch-member 22 of
 60 any usual or well-known form, said clutch-member being adapted to be thrown in engagement with the gear or sprocket wheel 19 to turn the same. The shifting means for the said clutch-member 22 consists of a
 65 bearing 23 slidably arranged upon the ver-

tical shaft 10, the said bearing 23 being provided with an outwardly extending arm 24 with the end of which is pivotally connected one end of a clutch-shifting lever 25, having a portion operatively connected with the
 70 member 22 for actuating the same in the usual manner.

Slidably arranged upon the vertical shafts 10 are other clamps 26, said clamps 26 being each provided with outwardly extending
 75 portions 27 which terminate in auxiliary clamps 28. Said clamps 26 are also provided with rearwardly extending members 29 formed with bearing-portions in which are rotatively arranged the respective end-
 80 portions of a shaft 30, substantially as illustrated. Attached to the front side of the outwardly extending portion 27 of each bearing 26 is a plate 31, said plate extending
 85 downwardly below the bottom of the said clamp 26, and being provided near one side with a hole or perforation 32 and near the other with a slotted opening 33. Pivotal-ly secured upon each plate 31, by means of a
 90 rearwardly extending pin or lug 34, which extends through the hole or perforation 32 and a rearwardly extending pin or lug 35 which extends through the slotted opening 33, is a plate 36, said plate 36 being held in
 95 place by the nuts 37 which are screwed upon the screw-threaded free ends of the said pins or lugs 34 and 35. The plate 36 is provided with a pair of bearings 38 and an inwardly extending handle-portion 39, which is pro-
 100 vided with a lug or stud 40. Mounted within the bearings 38 is a shaft 41 upon which is secured a worm 42, the free ends of the said shaft 41 being provided with gears or sprocket-wheels 43 each of which is connect-
 105 ed by means of a block or link-chain 44 with the respective gears or sprocket-wheels 19 mounted on the main or driving-shaft 15. Rotatively arranged in each bearing 28 is a short shaft or spindle 45 each spindle carry-
 110 ing upon its front end a worm-gear 46, adapted to engage with the worm 42. Upon the rear end of said shaft or spindle 45 is a gear or sprocket wheel 47. These gears or sprocket wheels 47 are operatively connected by means of a link or block-chain 48.

115 The plate 31 is provided with a lug 49 upon which is pivotally arranged a catch-lever 50, said lever being provided at its lower end with a hook or catch-piece 51, which normally engages with the lug or stud
 120 40, to hold the plate 36 and its bearings 38 in such a position that the worm 42 is brought in engagement with the worm-gear 46. For the purpose of normally keeping the said catch-lever 50 in operative engagement with
 125 the said lug or stud 40 until such time as it is proper to release the same, there is provided a flat-spring 52, which is secured upon the plate 31, and has its free end in engage-
 130 ment with the upper portion of the catch-

lever 50, in a manner clearly illustrated and as will be understood from an inspection of the drawings.

Slidably arranged upon the shaft 30, by means of bearings 53, is a cutter-carriage 54. The said cutter-carriage is provided with a bearing-plate 55 secured upon the upper side of the carriage, substantially as shown. The bearing-plate is provided with a centrally disposed rectangular opening 56, a pair of caps or bearing-members 57 being secured upon the under side of the said bearing-plate 55. Mounted in the bearings thus formed is a shaft or spindle 58 upon which is secured a pulley 59 which extends up through the rectangular opening 56. Secured upon the free end of the said shaft 58 is a cutter-tool 60 comprising a pair of disks 61 and 62, said disk resting against a shoulder 63 formed on the shaft 58. Each disk 61 and 62 is provided with a groove or channel 64 extending diagonally across its face, and at right angles to the axis of the shaft 58, the bottom of said groove or channel 64 forming an acute angle. A pair of knives or cutting blades 65 are inserted in the said channels or grooves 64, the edges of the said knife or cutting blades 65 being made to form an acute angle 66 so as to conform with the angular bottom of the said channels or grooves 64. A washer 67 and a nut 68 are screwed upon the screw-threaded end of the shaft 58 and serve to draw the two disks 61 and 62 together and thus bind or lock the knives or cutting blades 65 in their operative positions, between the disks 61 and 62. The said cutter-carriage 54 is provided with an upwardly extending portion 69 on its forward end to which is secured a handle 70, which is used to raise and lower the cutter-carriage into and out of engagement with the column, the cutter-carriage being adapted to swing or oscillate in a hinge-like manner with reference to the shaft 30 as an axis. A rib or cross-bar 71 is formed on the up-turned portion 69 of the cutter-carriage 54 through which passes the shank of an adjusting screw 72 which engages with an upwardly extending lug 73 upon the bearing-plate 55, and serves to hold or lock the same against any tendency to slip or move.

Extending from side to side of the cutter-carriage and on the under side thereof is another rib or cross-bar 74 provided with a bearing 75 in which is mounted a spindle which carries a wheel 76. This wheel 76 may be used to travel over a guide or pattern of the conformation of the column to be cut when such a method is desirable.

Arranged at the opposite edges of the cutter-carriage 54 are suitable standards or brackets 77, upon each of which is secured by means of the bolt 78 and nut 79, an adjustable trip-arm 80 formed of a series of tube-
portions 81 telescoped one within the other

and locked in position by means of the set-screws 82.

A pair of perforated ears or lugs 83 are secured to one of the said standards or brackets 77, with which are pivotally connected the arms 84 of a belt-tightener, the pulley 85 of which is secured between the free ends of said arms 84, a spring 86 being attached at one end to one of the arms 84 and at its other end to the bearing-plate 55 to maintain the pressing engagement of the pulley 85 against a belt 87 which connects the pulley 59 with the pulley wheel 16.

Arranged above the two bearings 53 of the cutter-carriage 54 is a rib or cross-bar 88 which is provided with a lug or stud 89. The link or block chain 48 is joined together by a turn-buckle 90 which engages with right and left threaded screw-shanks 91 secured upon the ends of the chain, said turn-buckle 90 being adapted to take up the slack in the chain; and, furthermore, being provided with a centrally disposed hole or opening 92 with which engages the previously mentioned lug or stud 89, serves as a coupling or connecting member to operatively connect the said cutter carriage 54 with the said chain 48, the purposes which will be more clearly set forth hereinafter in the description of the operation of the machine.

In order to secure a vertical adjustment of the operative parts of the machine, so that it may be adapted to flute columns of various diameters, the following apparatus is provided. Each of the bearings 11 are provided with a lug or extension 93 which provide bearings for screw-threaded shafts 94 and 95, said shaft 94 being provided with a right handed screw-thread and said shaft 95 being provided with a left handed screw-thread. Referring now to Figs. 1, 3 and 7 of the drawings, it will be seen that the screw-threaded shafts 94 and 95 extend through perforated and correspondingly screw-threaded perforations or holes formed in suitable extensions or lugs 96 and 97 of the respective elements or members which are provided with the bearing-portions 11 and 14, and the clamps 26 and rearwardly extending members 29. A pair of brackets or hangers 103 provided with bearings 104 are secured to the cross-beam 121 and mounted therein is a shaft 98, which is provided with a hand-wheel 99. Upon each end of the shaft 98 is secured a bevel-gear 100, each in operative engagement with a bevel-gear 101 secured upon each of the said screw-threaded shafts 94 and 95. It will be clearly understood that by turning the hand-wheel 99 to revolve the shaft 98 and its bevel-gears 100, the said bevel-gear 101 and the screw-threaded shafts 94 and 95 are caused to turn, and the threads of the shafts operating in the screw-threaded holes of the respective lugs or extensions 96 and 97 cause the bearings

14 and 23, and the clamps 26 and the rearwardly extending members 29, to rise or descend upon the vertical shafts 10, thus raising or lowering all the operative mechanisms of the device for the purposes above stated.

Having thus described in a general way the various parts and mechanical elements which make up the complete construction of the novel device for fluting columns and the like, it remains to briefly describe their operation. When the column is supported and held in the lathe-members 2, as above stated, the cutter-carriage 54 is shifted or placed at the starting point of the desired flute, and then lowered into the position indicated in Fig. 1 of the drawings. The main shaft 15 is then caused to revolve, and the pulley 16 thereon imparts its motion to the cutter-tool 60, through the belt 87, pulley 59 and shaft 58. One of the worms 42 is then brought in engagement with the worm-gear 46 on either the right or left hand side of the machine, according to the direction it is desired to move or shift the cutter carriage 54. When the worm 42 has thus been placed in its operative relation with the worm-gear 46, it is set in motion by shifting the clutch-member 22 in engagement with the gear or sprocket wheel 19, which causes it to revolve with the shaft 15, and through the medium of the chain 44, the gear or sprocket-wheel 43 and the shaft 41, the worm 42 is caused to revolve the worm-gear 46, which through the medium of its shaft 45 and the gear or sprocket-wheel 47 operates the chain 48. The latter by means of the coupling-means adapted to connect it with the cutter-carriage 54, draws said cutter-carriage 54 from one side of the machine to the other, thus permitting the cutter-tool 60 to traverse the length of the column and cut the flute thereon. In order to stop the operation or movement of the cutter-carriage 54, when a flute of the required length has been cut in the column, the adjustable trip-arm 80 is set at the proper length to trip or throw out of engagement the catch-lever 50 with the lug or stud 40 when the cutter-carriage 54 reaches a certain point, thus causing the worm 42 to drop away from its operative engagement with the worm-gear 46, and thereby bringing the shifting or feeding mechanism to a full stop.

Thus, by alternately operating the worm 42 on opposite sides of the machine, the cutter carriage 54 is caused to slide back and forth upon the shaft 30 in either direction, alternately, and as will be clearly evident.

The minor and detail operations of the parts and devices of the complete machine will be clearly understood from an inspection of the drawings, and need not, therefore, be more fully described.

It will be readily understood from the foregoing description, that the present invention

provides a novel and effective device for fluting columns and the like, the flutings or channels being perfectly made, and a simple mechanism is the result which saves much time, labor and expense, in the production of such fluted, grooved or channeled columns.

I claim:

1. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, of a vertical shaft secured to and extending upwardly from the back of each lathe-member, a fluting mechanism longitudinally of the column, and means connected with each vertical shaft for raising and lowering the fluting mechanism, substantially as and for the purposes set forth.

2. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, of a vertical shaft secured to and extending upwardly from the back of each lathe-member, a reciprocatory fluting mechanism provided with a cutter, and means for moving said fluting mechanism back and forth and longitudinally of the column, and means connected with each vertical shaft for raising and lowering the fluting mechanism, substantially as and for the purposes set forth.

3. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, of a vertical shaft secured to and extending upwardly from the back of each lathe-member, a fluting mechanism provided with a cutter, means for moving said fluting mechanism longitudinally of the column, and means for automatically arresting the movement of the fluting mechanism when a flute of the desired length has been made, and means connected with each vertical shaft for raising and lowering the fluting mechanism, substantially as and for the purposes set forth.

4. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, of a vertical shaft secured to and extending upwardly from the back of each lathe-member, a fluting-mechanism provided with a cutter, means for alternately moving said fluting mechanism in opposite directions longitudinally of the column, and means for automatically arresting the movement of the fluting-mechanism when a flute of the desired length has been made, and means connected with each vertical shaft for raising and lowering the fluting mechanism, substantially as and for the purposes set forth.

5. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, of a vertical shaft secured to and extending upwardly from the back of each lathe-member, a fluting-mechanism provided with a cutter, means for moving said fluting mechanism in oppo-

site directions longitudinally of the column, and means for automatically arresting the movement of the fluting-mechanism when a flute of the desired length has been made, of
 5 vertical shafts, bearings 26 mounted upon said shafts, an auxiliary bearing 28 connected with each bearing 26, spindles rotatively arranged in said bearings 28, a sprocket-wheel upon each spindle, and a link-chain arranged
 10 over said sprocket-wheels, said link-chain being attached to said fluting-mechanism, and means connected with each vertical shaft for raising and lowering the fluting mechanism, substantially as and for the purposes set
 15 forth.

6. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, of a vertical shaft secured to and extending upwardly
 20 from the back of each lathe-member, a fluting-mechanism provided with a cutter, means for moving said fluting mechanism in opposite directions longitudinally of the column, and means for automatically arresting the
 25 movement of the fluting-mechanism when a flute of the desired length has been made, of vertical shafts, bearings 26 mounted upon said shafts, an auxiliary bearing 28 connected with each bearing 26, spindles rotatively ar-
 30 ranged in said bearings 28, a sprocket-wheel upon each spindle, and a link-chain arranged over said sprocket wheels, said link-chain being attached to said fluting-mechanism, and means for throwing either of said sprocket-
 35 wheels in operative engagement for producing the reciprocatory movements of the fluting-mechanism, and means connected with each vertical shaft for raising and lowering the fluting mechanism, substantially as
 40 and for the purposes set forth.

7. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, a vertical shaft secured to and extending upwardly
 45 from the back of each lathe-member, a horizontal shaft 30, means connected with said vertical shafts for moving said horizontal shaft vertically, a fluting mechanism movable longitudinally upon said shaft, a rotary
 50 cutter carried by said fluting-mechanism, and means for actuating said rotary cutter, substantially as and for the purposes set forth.

8. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, a vertical shaft secured to and extending upwardly
 55 from the back of each lathe-member, a horizontal shaft 30, means connected with said vertical shafts for moving said horizontal shaft vertically, a fluting mechanism movable longitudinally upon said shaft, a rotary
 60 cutter carried by said fluting-mechanism, and means for actuating said rotary cutter, comprising a pulley carried by said fluting-

mechanism, a pair of vertical shafts 10, bearings upon said shafts, a main shaft 15 rotatively arranged in said bearings, a long-pulley upon said shaft 15, and a belt arranged over said long pulley and the pulley of said
 70 fluting-mechanism, substantially as and for the purposes set forth.

9. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, a vertical
 75 shaft secured to and extending upwardly from the back of each lathe-member, a horizontal shaft 30, means connected with said vertical shafts for moving said horizontal shaft vertically, a reciprocatory fluting mechanism movably arranged upon said shaft,
 80 means for moving said fluting-mechanism back and forth upon said shaft, a rotary cutter carried by said fluting mechanism, and means for actuating said rotary cutter, substantially as and for the purposes set forth.
 85

10. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, a vertical shaft secured to and extending upwardly
 90 from the back of each lathe-member, a horizontal shaft 30, means connected with said vertical shafts for moving said horizontal shaft vertically, a reciprocatory fluting mechanism movably arranged upon said shaft,
 95 means for moving said fluting mechanism back and forth upon said shaft, a rotary cutter carried by said fluting mechanism, and means for actuating said rotary cutter, comprising a pulley carried by said fluting-mechanism, a
 100 pair of vertical shafts 10, bearings upon said shafts, a main shaft 15 rotatively arranged in said bearings, a long-pulley upon said shaft 15, and a belt arranged over said long pulley and the pulley of said fluting-mechanism,
 105 substantially as and for the purposes set forth.

11. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, a vertical
 110 shaft secured to and extending upwardly from the back of each lathe-member, a horizontal shaft 30, means connected with said vertical shafts for moving said horizontal shaft vertically, a fluting mechanism movable longitudinally upon said shaft, means
 115 for automatically arresting the movement of the fluting mechanism when a flute of the desired length has been made, a rotary cutter carried by said fluting mechanism, and
 120 means for actuating said rotary cutters, substantially as and for the purposes set forth.

12. In an apparatus for fluting columns, in combination, with lathe-members between
 125 which the column is supported, a vertical shaft secured to and extending upwardly from the back of each lathe-member, a horizontal shaft 30, means connected with said vertical shafts for moving said horizontal
 130

shaft vertically, a fluting mechanism movable longitudinally upon said shaft, means for automatically arresting the movement of the fluting mechanism when a flute of the
 5 desired length has been made, a rotary cutter carried by said fluting mechanism, and means for actuating said rotary cutter, comprising a pulley carried by said fluting-mechanism, a pair of vertical shafts 10,
 10 bearings upon said shafts, a main shaft 15 rotatively arranged in said bearings, a long-pulley upon said shaft 15, and a belt arranged over said long pulley and the pulley of said fluting-mechanism, substantially as and for
 15 the purposes set forth.

13. In an apparatus for fluting columns, in combination, with lathe-members between which the column is supported, a vertical shaft secured to and extending upwardly
 20 from the back of each lathe-member, a horizontal shaft 30, means connected with said vertical shafts for moving said horizontal shaft vertically, a fluting mechanism movable longitudinally upon said shaft, means
 25 for automatically arresting the movement of the fluting mechanism when a flute of the desired length has been made, means for moving said fluting mechanism in the opposite direction longitudinally of the column, a
 30 rotary cutter carried by said fluting mechanism, and means for actuating said rotary cutter, substantially as and for the purposes set forth.

14. In an apparatus for fluting columns, in
 35 combination, with lathe-members between which the column is supported, a vertical shaft secured to and extending upwardly from the back of each lathe-member, a horizontal shaft 30, means connected with said
 40 vertical shafts for moving said horizontal shaft vertically, a fluting mechanism movable longitudinally upon said shaft, means for automatically arresting the movement of the fluting mechanism when a flute of the
 45 desired length has been made, means for moving said fluting mechanism in the opposite direction longitudinally of the column, a rotary cutter carried by said fluting mechanism, and means for actuating said rotary
 50 cutter, comprising a pulley carried by said fluting-mechanism, a pair of vertical shafts 10, bearings upon said shafts, a main shaft 15 rotatively arranged in said bearings, a long-pulley upon said shaft 15, and a belt arranged
 55 over said long pulley and the pulley of said fluting-mechanism, substantially as and for the purposes set forth.

15. In an apparatus for fluting columns, the combination, with a movable mechanism
 60 carrying a cutter and a pulley, of mechanism for actuating said fluting mechanism, comprising a pair of vertical shafts 10, a bearing upon each shaft, a shaft 15 arranged in said bearings, a long pulley 16 upon said shaft
 65 15, and a belt arranged over said long pulley

and the pulley of the fluting-mechanism, and a clutch-device upon each end-portion of said shaft 15, for throwing said shaft and its pulley into and out of operation, substantially as and for the purposes set forth. 70

16. In an apparatus for fluting columns, the combination, with a movable fluting mechanism carrying a cutter and a pulley, and mechanism for actuating said fluting mechanism, of a pair of vertical shafts 10, a
 75 bearing upon each shaft, a shaft 15 arranged in said bearings, a long pulley 16 upon said shaft 15, and a belt arranged over said long pulley and the pulley of the fluting-mechanism, and vertically slidable devices upon said
 80 shafts 10 for simultaneously raising or lowering said fluting-mechanism and said shaft 15 and long pulley, substantially as and for the purposes set forth.

17. In an apparatus for fluting columns, 85 the combination, with a movable fluting mechanism carrying a cutter and a pulley, and mechanism for actuating said fluting mechanism, of a pair of vertical shafts 10, a bearing upon each shaft, a shaft 15 arranged
 90 in said bearings, a long pulley 16 upon said shaft 15, and a belt arranged over said long pulley and the pulley of the fluting-mechanism, and vertically slidable devices upon said shafts 10 for simultaneously raising or lowering
 95 said fluting-mechanism and said shaft 15 and long pulley, consisting of bearing-members 26 slidably arranged upon the lower portions of said shafts 10, a pair of vertical shafts 94 and 95 mounted upon said bearing-
 100 members 26, said vertically slidable devices upon said shafts 10 being provided with perforated screw-threaded lugs 96 in which said shafts 94 and 95 extend, said shafts being respectively provided with
 105 right and left-handed screw-threads, and means for producing rotary motion of said shafts 94 and 95, substantially as and for the purposes set forth.

18. In an apparatus for fluting columns, 110 the combination, with a movable fluting mechanism carrying a cutter and a pulley, and mechanism for actuating said fluting mechanism, of a pair of vertical shafts 10, a bearing upon each shaft, a shaft 15 arranged
 115 in said bearings, a long pulley 16 upon said shaft 15, and a belt arranged over said long pulley and the pulley of the fluting-mechanism, and vertically slidable devices upon said shafts 10 for simultaneously raising or lowering
 120 said fluting-mechanism and said shaft 15 and long pulley, consisting of bearing-members 26 slidably arranged upon the lower portions of said shafts 10, a pair of vertical shafts 94 and 95 mounted upon said bearing-
 125 members 26, said vertically slidable devices upon said shafts 10 being provided with perforated screw-threaded lugs 96 in which said shafts 94 and 95 extend, said shafts being respectively provided with right and left- 130

handed screw-portions, and means for producing rotary motion of said shafts 94 and 95, consisting of a horizontal shaft 98, a hand-wheel upon said shaft, and intermeshing bevel-gears upon the opposite ends of the shaft 98 and the upper ends of the shafts 94 and 95, substantially as and for the purposes set forth.

19. In an apparatus for fluting columns, the combination, with a vertical shaft 10, a clamp 26 upon said shaft, and a bearing-portion 29 connected with said clamp 26, a bearing-device 11 also on said shaft 10, and a bearing portion 14 carried by said bearing device 11, a shaft 15 rotatively arranged in said bearing-portion 14, a sprocket-wheel 19 upon said shaft 15, a bearing-portion 28 connected with said clamp 26, a spindle in said bearing-portion, a worm-gear upon said spindle, a plate connected with said clamp 26, bearings 38 on said plate, a spindle mounted in said bearings, a worm on said spindle, a sprocket-wheel 43 upon said spindle, and a link-chain arranged over said sprocket-wheel 43 and the sprocket-wheel 19, substantially as and for the purposes set forth.

20. In an apparatus for fluting columns, the combination, with a vertical shaft 10, a clamp 26 upon said shaft, and a bearing-portion 29 connected with said clamp 26, a bearing-device 11 also on said shaft 10, and a bearing portion 14 carried by said bearing-device 11, a shaft 15 rotatively arranged in said bearing-portion 14, a sprocket-wheel 19 upon said shaft 15, a bearing-portion 28 connected with said clamp 26, a spindle in said bearing-portion, a worm gear upon said spindle, a plate pivotally connected with said clamp 26, bearings 38 on said plate, a spindle mounted in said bearings, a worm on said spindle, a sprocket-wheel 43 upon said spindle, a link-chain arranged over said sprocket-wheel 43 and the sprocket-wheel 19, and means for producing a swinging movement of said plate and thus throwing said worm out of mesh with the worm-gear, substantially as and for the purposes set forth.

21. In an apparatus for fluting columns, the combination, with a vertical shaft 10, a clamp 26 upon said shaft, and a bearing-portion 29 connected with said clamp 26, a bearing-device 11 also on said shaft 10, and a bearing portion 14 carried by said bearing-device 11, a shaft 15 rotatively arranged in said bearing-portion 14, a sprocket-wheel

19 upon said shaft 15, a bearing-portion 28 connected with said clamp 26, a spindle in said bearing-portion, a worm-gear upon said spindle, a plate pivotally connected with said clamp 26, bearings 38 on said plate, a spindle mounted in said bearings, a worm on said spindle, a sprocket-wheel 43 upon said spindle, and a link-chain arranged over said sprocket-wheel 43 and the sprocket-wheel 19 and means for producing a swinging movement of said plate and thus throwing said worm out of mesh with the worm-gear, consisting of a lug 40 upon said plate, and a pivoted lever provided with a hook-shaped holding portion adapted to be brought in holding engagement with said lug, substantially as and for the purposes set forth.

22. In an apparatus for fluting columns, the combination, with a vertical shaft 10, a clamp 26 upon said shaft, and a bearing-portion 29 connected with said clamp 26, a bearing-device 11 also on said shaft 10, and a bearing portion 14 carried by said bearing-device 11, a shaft 15 rotatively arranged in said bearing-portion 14, a sprocket-wheel 19 upon said shaft 15, a bearing-portion 28 connected with said clamp 26, a spindle in said bearing-portion, a worm-gear upon said spindle, a plate pivotally connected with said clamp 26, bearings 38 on said plate, a spindle mounted in said bearings, a worm on said spindle, a sprocket-wheel 43 upon said spindle, a link-chain arranged over said sprocket-wheel 43 and the sprocket-wheel 19, and means for producing a swinging movement of said plate and thus throwing said worm out of mesh with the worm-gear, consisting of a lug 40 upon said plate, and a pivoted lever provided with a hook-shaped holding portion, a spring in engagement with a portion of said lever for forcing said hook-shaped portion in engagement with said lug, and a handle-portion 39 on said lever for the disengagement of said hook-shaped portion of the lever from said lug, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 8th day of October, 1906.

JAMES NEILL.

Witnesses:

FREDK. C. FRAENTZEL,
FREDERICK JAMISON.