

PATENTED DEC. 6, 1904.

APPLICATION FILED APR. 20, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

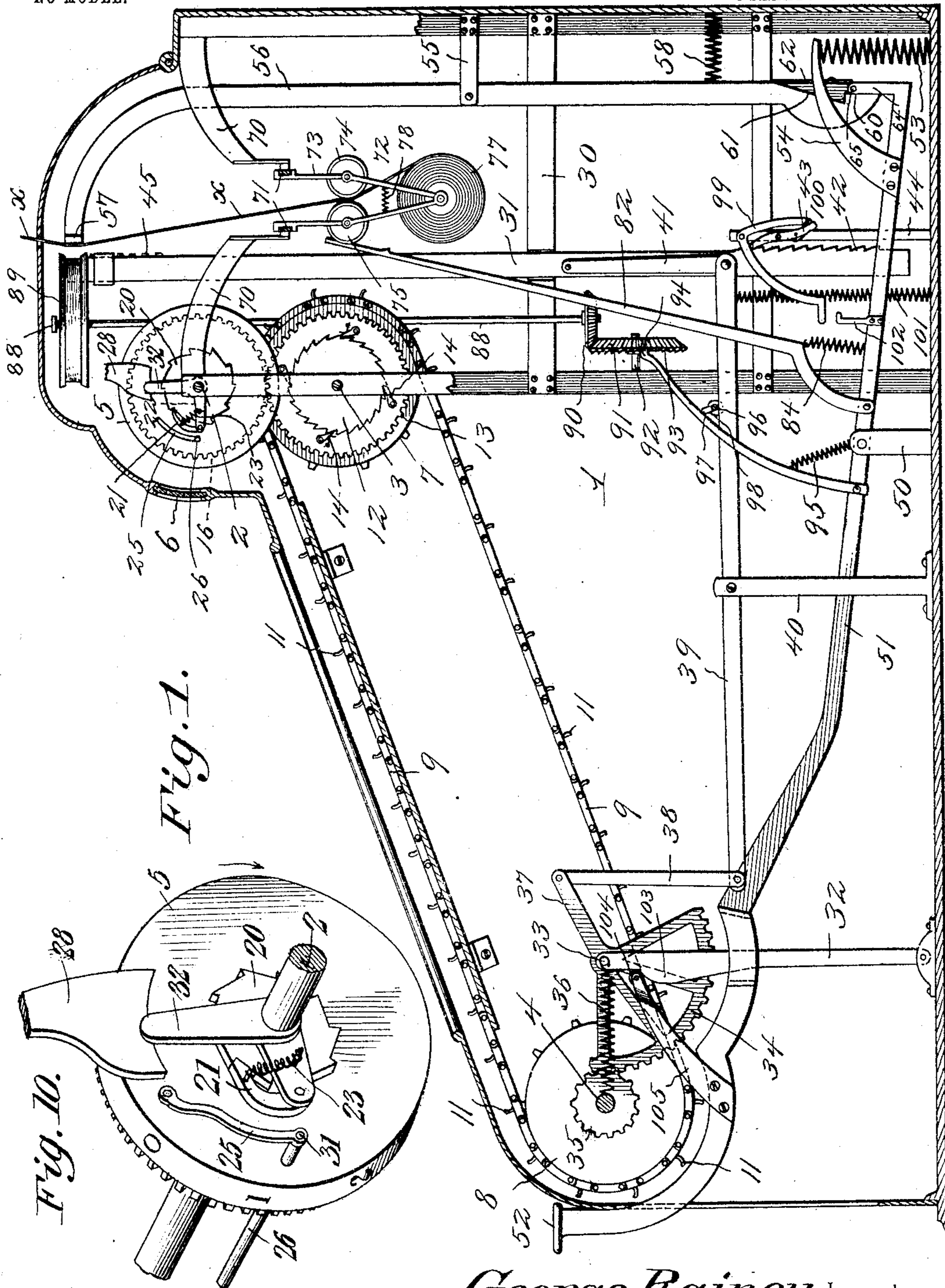


Fig. 10.

Fig. 1.

Witnesses

Witnesses
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No. 776,617.

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G. RAINEY.
CALCULATING AND RECORDING MACHINE.

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NO MODEL.

3 SHEETS—SHEET 2.

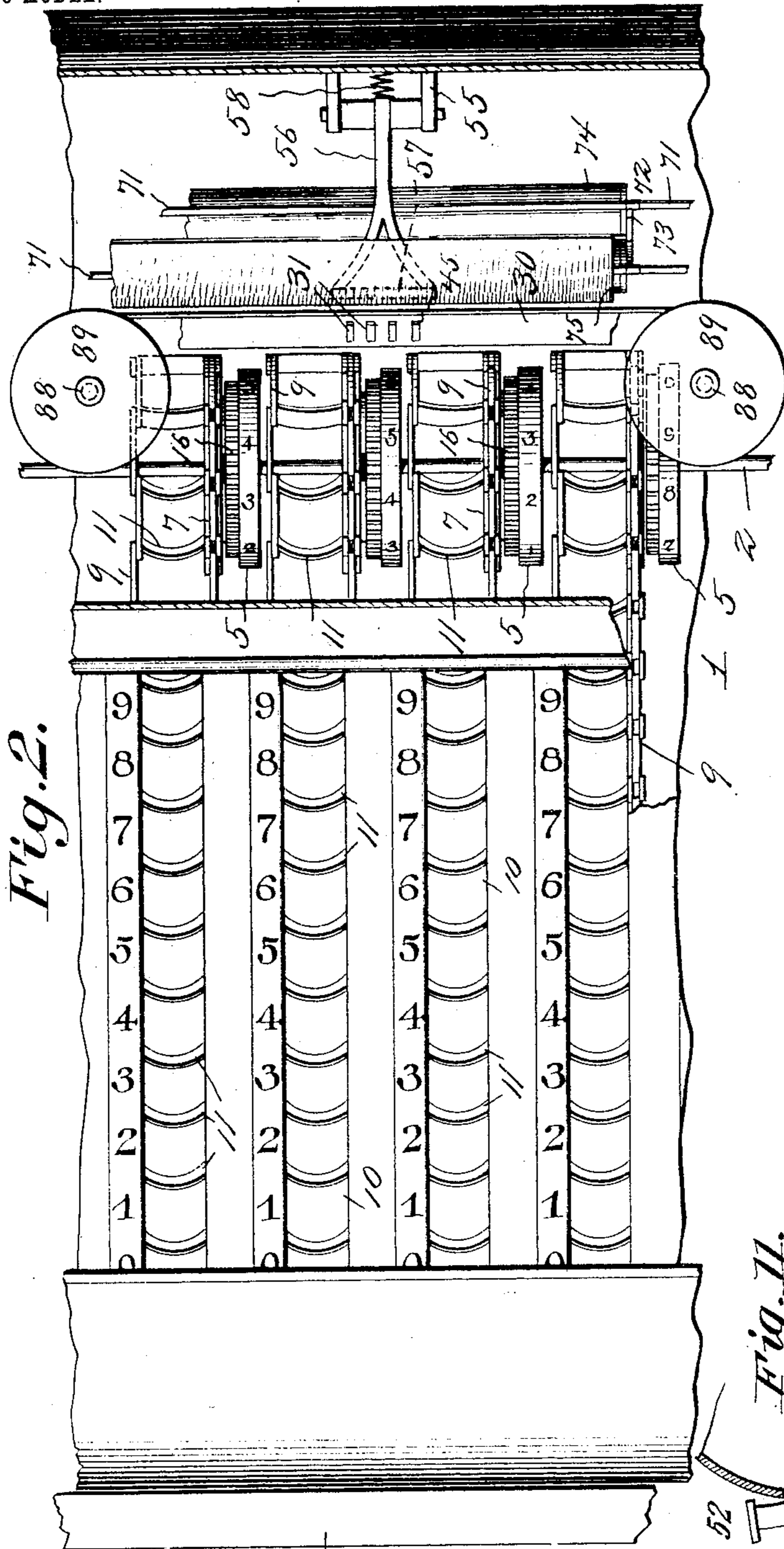


Fig. 2.

Fig. 4.

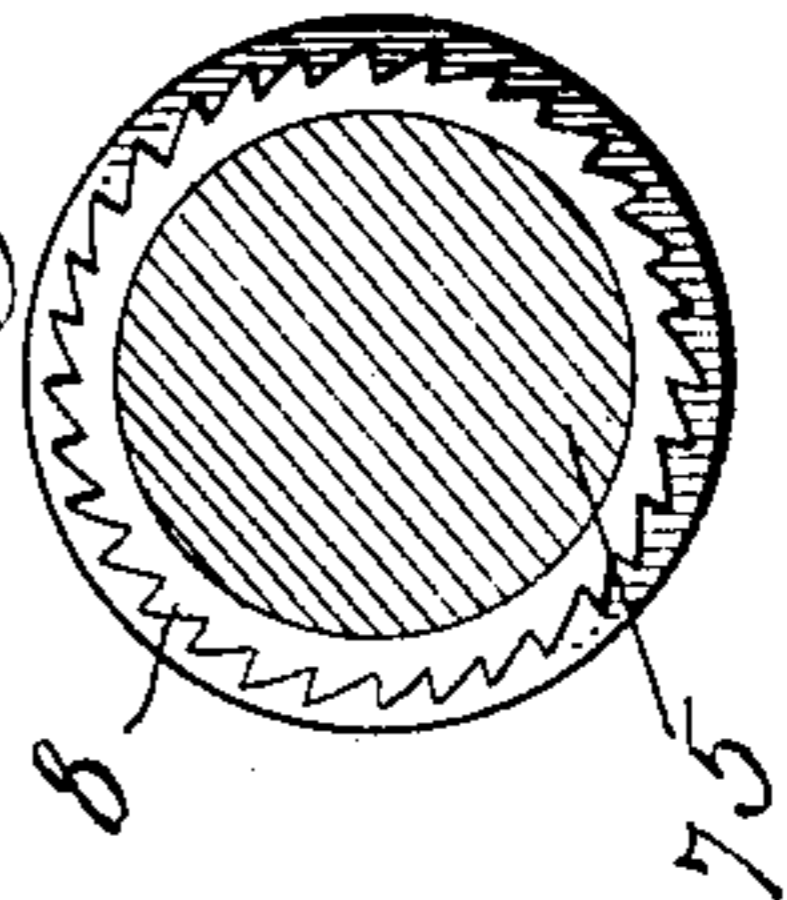


Fig. 3.

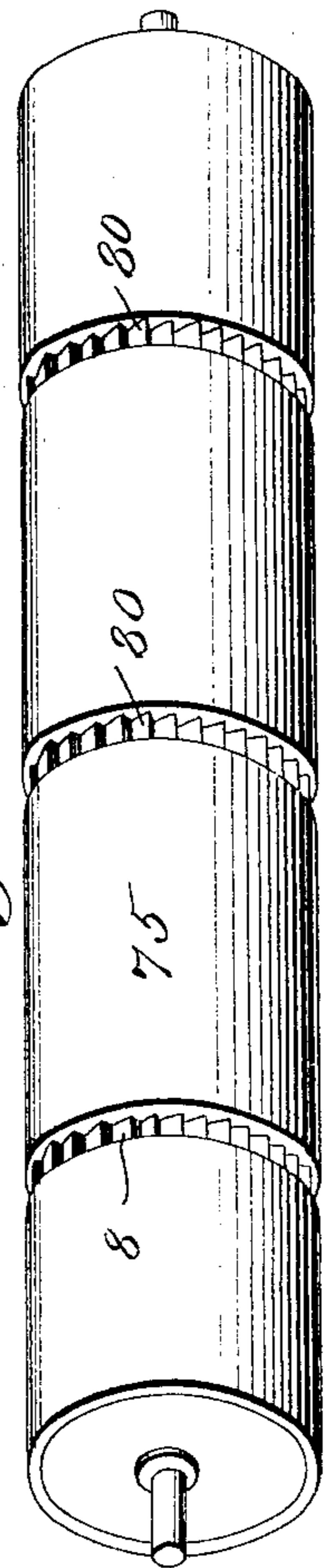
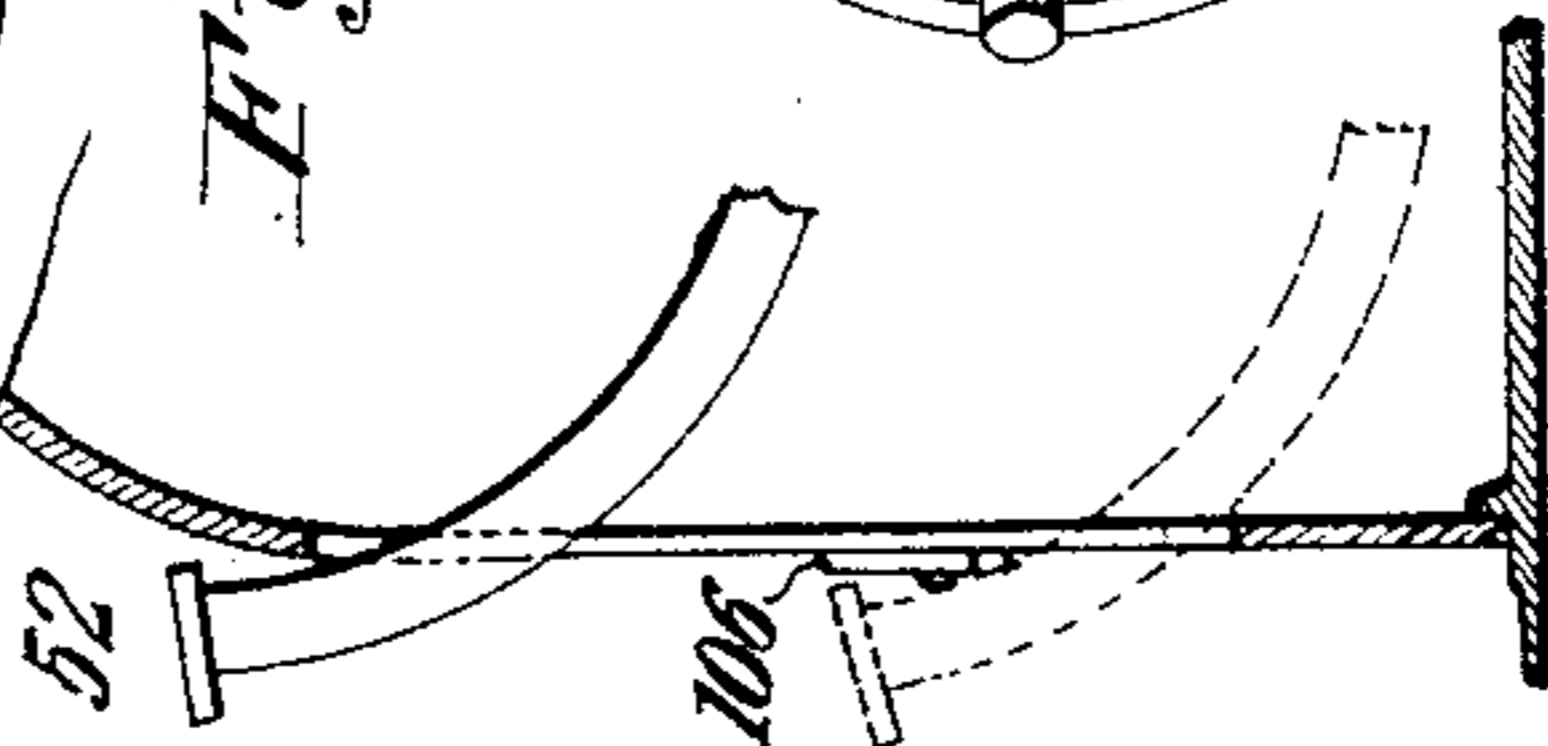


Fig. 11.



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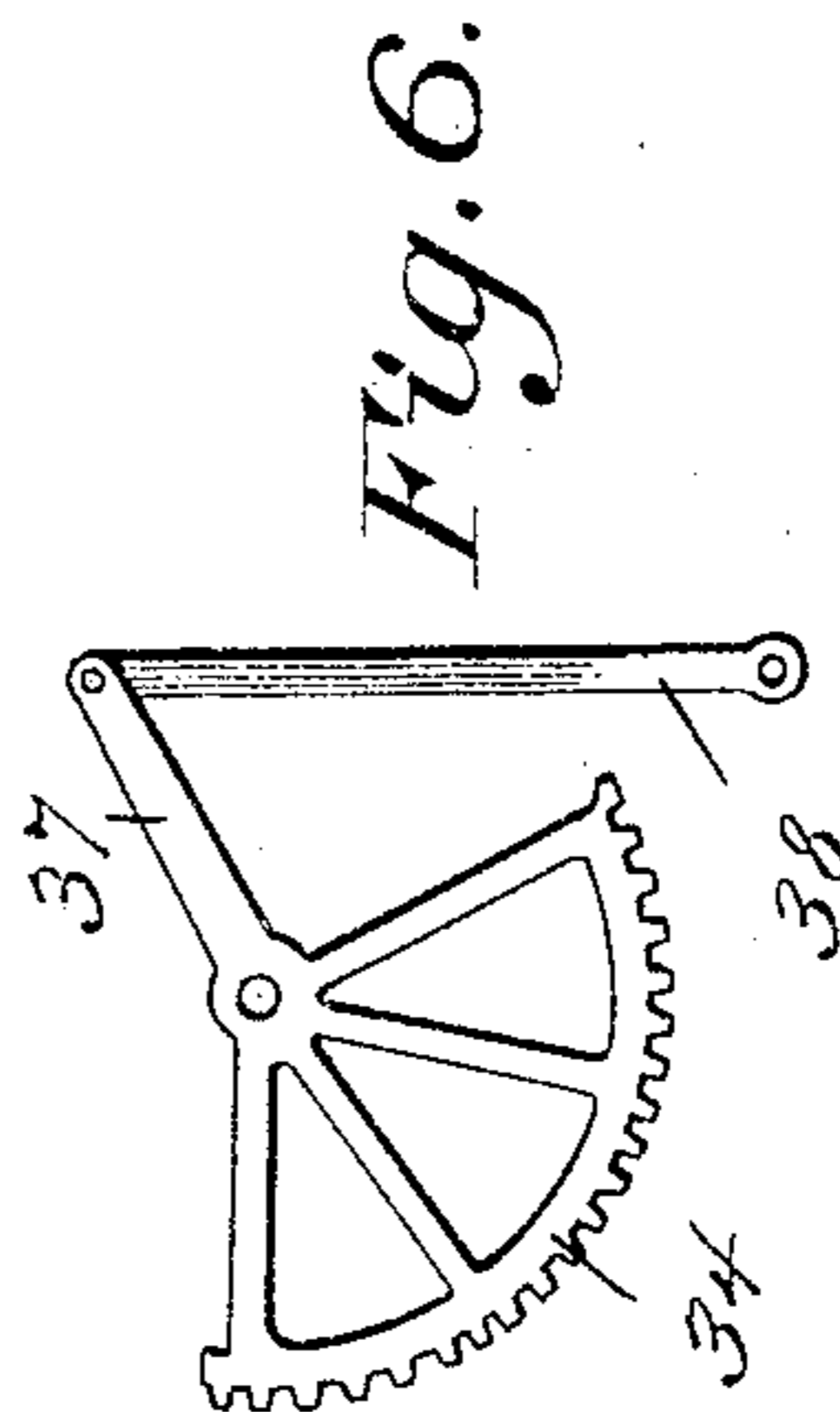
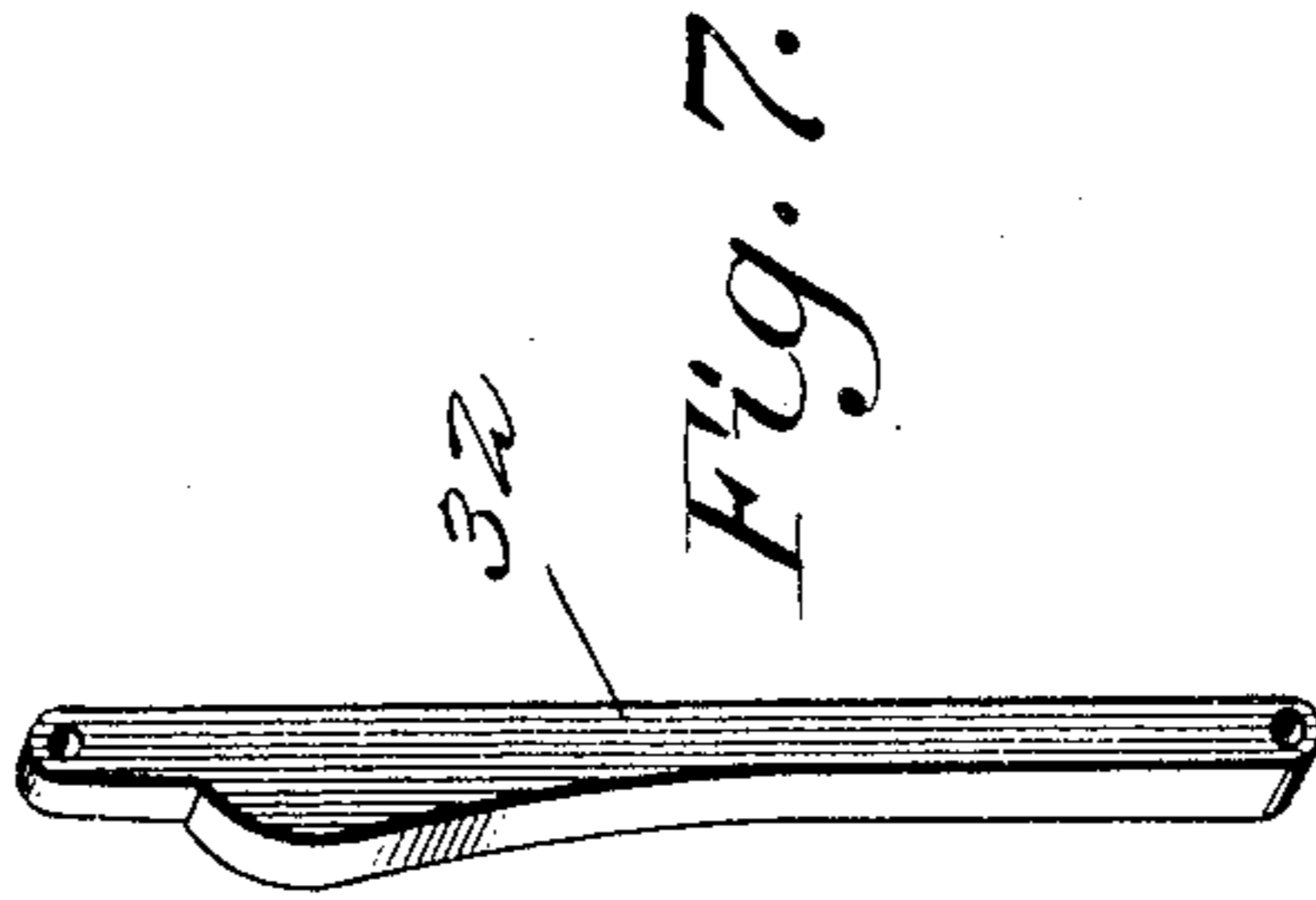
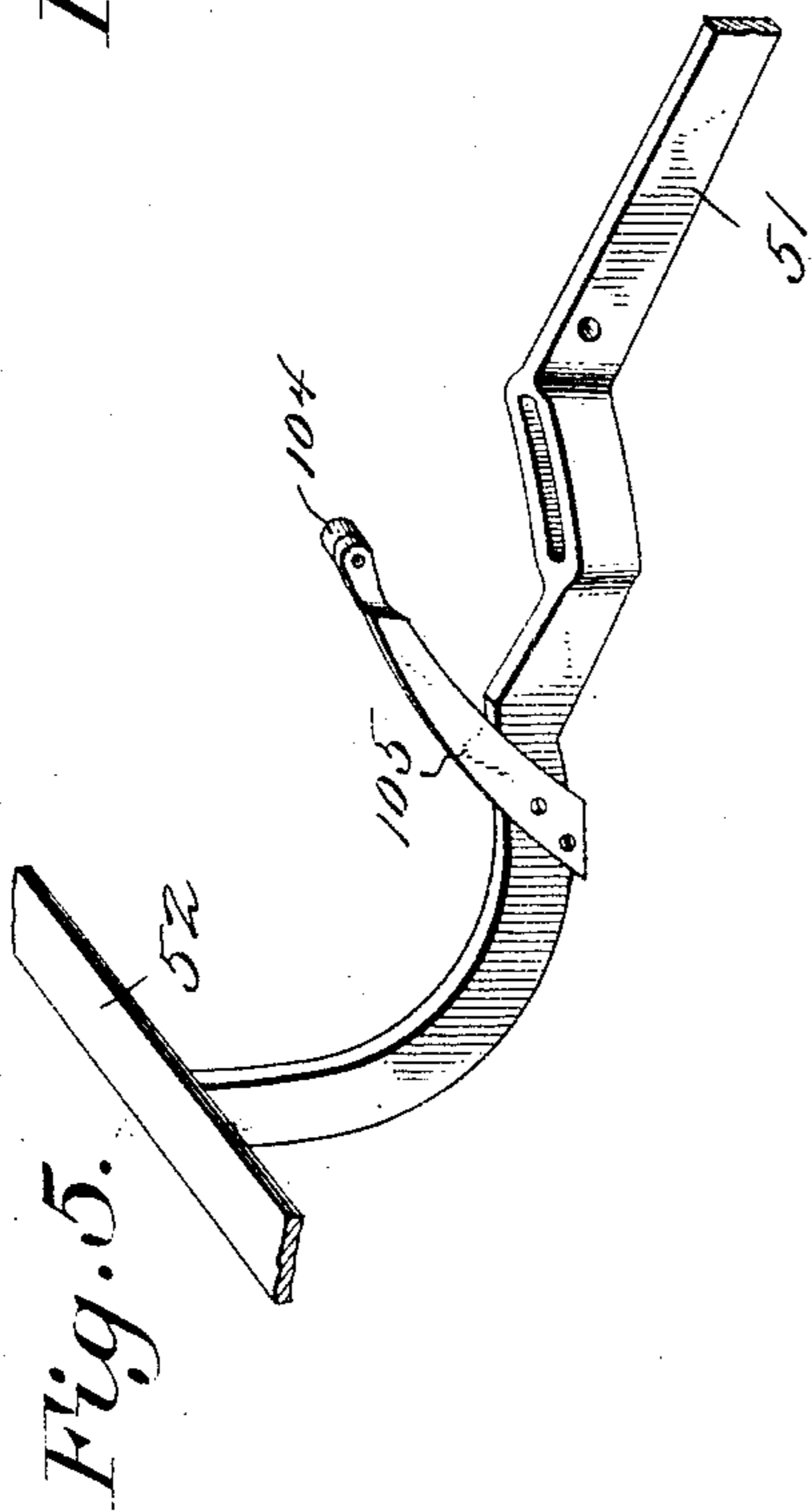
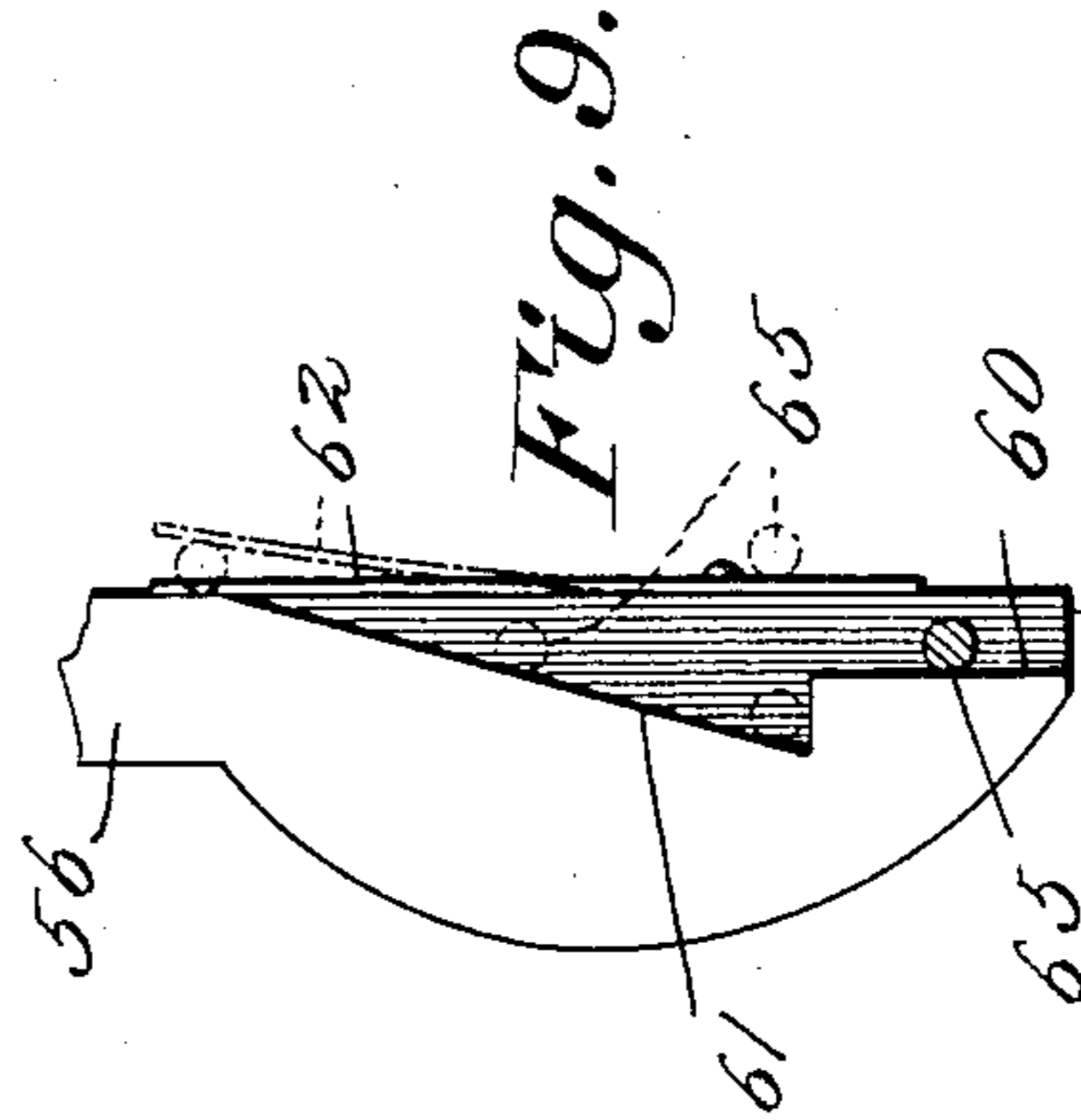
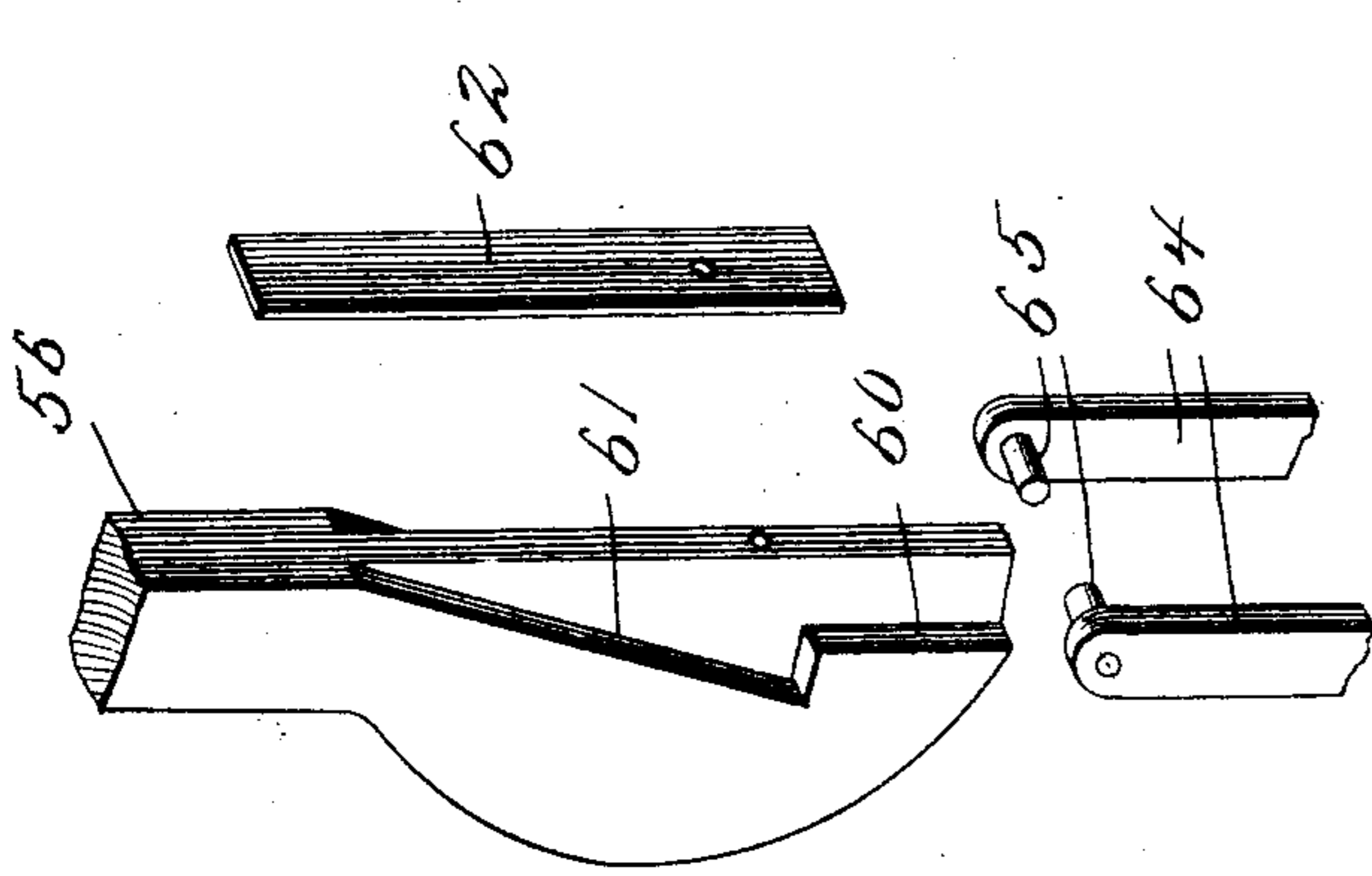
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

GEORGE RAINEY, OF ENID, OKLAHOMA TERRITORY, ASSIGNOR OF
ONE-HALF TO AUSTIN N. LEFFINGWELL, OF CROPPER, OKLA-
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CALCULATING AND RECORDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 776,617, dated December 6, 1904.

Application filed April 20, 1904. Serial No. 204,098. (No model.)

To all whom it may concern:

Be it known that I, GEORGE RAINEY, a citizen of the United States, residing at Enid, in the county of Garfield and Territory of Oklahoma, have invented a new and useful Calculating and Recording Machine, of which the following is a specification.

This invention relates to certain improvements in calculating and recording machines, and has for its principal object to provide a machine of simple and economical construction wherein each horizontal row of figures added will be printed on a sheet of paper to form a permanent record, while the gradually-increasing total will be shown on registering or totaling devices.

A further object of the invention is to construct a machine of this class in which a plurality of figures in a row may be simultaneously added, it being unnecessary to start the adding operation with the figure at the right-hand end of the row or with figures in the units-column.

A still further object of the invention is to provide a calculating and recording machine wherein after the depression of the proper keys or the manipulation in any similar manner of the indicating-disks the depression of a single key will effect the printing operation and the return of this key will cause the various parts, including the imprinting-type, to return to initial position in readiness for the addition of the next row of figures.

A still further object of the invention is to provide a novel form of paper-carriage and paper-feeding mechanism so arranged that the carriage may be adjusted to any desired position laterally of the machine and the imprinting operation accomplished at any point on the sheet of paper.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in the novel construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the ap-

ended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a longitudinal elevation of a calculating and recording machine constructed in accordance with the invention. Fig. 2 is a partial plan view of the same. Fig. 3 is a detail perspective view of one of the paper-feed rollers detached. Fig. 4 is a transverse sectional elevation of the paper-feed roller shown in Fig. 3. Fig. 5 is a detail perspective view of a portion of the mechanism for effecting the operation of the impression-hammer. Fig. 6 is a detail view of a portion of the mechanism for setting the type-carriers. Fig. 7 is a detached perspective view of one of the segment-supporting levers. Fig. 8 is a detail perspective view showing the several parts of the lower end of the impression-hammer detached. Fig. 9 is a detail side elevation of the lower end of an impression-hammer. Fig. 10 is a detail view of a portion of the transfer mechanism of the registering-dials. Fig. 11 is a detail view of a portion of the front of the machine, showing the turn-button for holding the recording mechanism in inoperative position.

Similar characters of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The various working parts of the machine are supported in a suitable frame 1, having bearings for the support of three transversely-extending parallel shafts 2, 3, and 4. The shaft 2 carries a plurality of disks 5, on which are digits from "0" to "9," inclusive, which may be moved to position in alinement with a display-opening 6 in the casing in order to show the gradually-increasing total. The shaft 3 carries a plurality of sprocket-wheels 7, that are connected to sprocket-wheels 8 on the shaft 4 by means of link belts 9, there being as many independent sets of sprocket-wheels

and link belts as there are columns to be added, and the machine may be made of any width in order to add up to hundreds of millions or more, if desired. Each of the link belts is in alinement with and is exposed by a longitudinal slot or opening 10 in the upper wall of the casing, and each link belt is so constructed as to permit of engagement by the fingers, the point at which the belt is engaged depending on the figure to be added. In the present instance the belts are shown as provided with equidistantly-spaced cross-bars 11, nine of which are constantly exposed at the slot 10, and on the upper face of the casing are digits running from "0" to "9," one digit being opposite the space between each two of the cross-bars, so that the operator of the machine may insert his finger in the proper space representing the number to be added, and by pulling downward or forward until the cross-bar reaches the end of the slot the desired number will be added. Each of the sprocket-wheels 7 is provided with ten teeth and is turned to the extent of thirty-six degrees for each unit of value, being turned nine-tenths of a revolution when the numeral 9 is to be added, and this is the most extensive movement which can be imparted to the sprocket-wheel at one operation.

Each sprocket-wheel 7 is mounted loosely on the shaft, and at one side of each sprocket-wheel is a ratchet-wheel 12 and a gear-wheel 13, secured rigidly to each other and also mounted loosely on the shaft. The side of the sprocket-wheel is provided with a plurality of pins for the support of spring-pressed pawls 14, adapted to engage the teeth of the ratchet-wheel, and when forward movement of the link belt or sprocket-wheel occurs, as during the adding operation, the pawls will engage the ratchet-wheel and impart the movement thereto and to the gear-wheel. Should the gear-wheel be moved independent of the sprocket-wheel, the teeth of the ratchet-wheel will simply pass the pawls and the sprocket-wheel will remain stationary, this construction being necessary in order to prevent operative movement of the sprocket-wheels and belts during the operation of the transfer mechanism between the totaling-disks hereinafter described.

The totaling-disks 5 are each provided with digits from "0" to "9," arranged at equidistant points on the periphery of the disk and arranged to be exposed successively at the opening 6. These disks are mounted loosely on the supporting-shaft 2, and to each disk is secured a gear-wheel 16, intermeshing with the gear-wheel 13, the two gears being of the same diameter and the movement of one being equal to that of the other.

To the side of each gear-wheel 16 or to the side of the disk 5 is secured a ratchet-wheel 20, with which may engage a pawl 21, carried by the shorter arm of a bell-crank lever 22,

that is mounted loosely on the shaft 2, a suitable stop being employed to normally hold the longer arm of the bell-crank lever in a vertical position and the lever being restored to this position after each operation by a tension-spring 23. To the side of the gear is secured one end of a spring 25, that preferably is arcuate in form and arranged concentric with the axis of the shaft 2. The free end of the spring is provided with a pin 26, which extends through a guide-opening in the gear-wheel and sprocket-wheel, and when the spring is depressed or flattened against the surface of the gear the end of the pin will be projected for a sufficient distance to engage with the vertical arm of that bell-crank lever associated with the totaling-disk to the left.

Extending across the frame is a bar 27, carrying a number of cams 28, which are engaged by the springs 25 once during each revolution of the gear-wheel and indicating-disk and remain in engagement for about one-tenth of a revolution, so that, taking the units-disk as an example, the spring of said units-disk will be depressed until the pin 26 has approached and engages with the longer arm of the bell-crank lever operating the tens-disk and will impart thereto an angular movement to the extent of thirty-six degrees, and this movement will be imparted through the pawl 21 to the ratchet-wheel 20, and thence to the tens totaling-disk. This movement will also be imparted to the gear-wheel 16 of the tens-disk; but owing to the pawl-and-ratchet connection 14 the gear-wheel 13 will be moved a corresponding extent without effecting any movement of the sprocket-wheel 7, and this is important in that it permits the operation of the transfer mechanism without danger of moving the preliminary operating mechanism, and thus transferring the movement to the imprinting-type, which have been or are about to be adjusted to position by said operating mechanism.

At a point to the rear of the totaling-disks the frame is provided with guides 30 for type-bars 31 of a number equal to the number of totaling-disks, and these are preferably arranged somewhat closer together than the totaling-disks in order that they may form a readily-readable record.

Near the front of the machine and adjacent to each of the forward sprocket-wheels 8 is a pivoted standard 32, carrying at its upper end a stud-bolt 33, on which is mounted a toothed segment 34, to be engaged by a pinion 35, one of said pinions being secured to each of the sprocket-wheels 8, and the intermeshing of a segment and pinion being accomplished by means of a helical compression-spring 36, extending between the stud 33 and the shaft 4. To each of the gear-segments 34 is secured an arm 37, that is connected by a link 38 to one arm of a lever 39, pivoted at a point intermediate of its length to the upper

portion of a standard 40. The opposite end of the lever 39 is connected by a link 41 to one of the type-bars 31, the link connection permitting the oscillatory movement of the lever without interfering with the straight vertical movement of the type-bar.

At the lower end of each type-bar is a rack 42, having ten teeth, and with this rack engages a spring-pressed pawl 43, pivoted near the upper end of a standard 44, which may form a part of the frame. The connections of the parts are such that at each movement of one of the link belts the movement will be imparted to the sprocket-wheel 8, to pinion 35, gear-segment 34, arm 37, link 38, and lever 39 to the type-bar, the latter being elevated a distance in proportion to the extent of movement of the link belt and being held in any adjusted position by means of the pawl 43. This movement brings one of the imprinting-type 45 into printing position, the type remaining in such position until the line is completed and the printing operation accomplished.

To the standards 50, carried by the base of the machine, are pivoted a number of levers 51, each of which is provided with a guiding-slot for the passage of a standard 32, so that the standard may be at all times maintained in proper position with respect to the pinion 35. The outer ends of all of these levers are rigidly secured to a cross-bar 52, which remains at the front of the machine in a position to be conveniently depressed by the operator. The finger-strip 52 is normally kept in elevated position by means of coiled tension-springs 53, that are connected to arms 54 at the rear ends of levers 51, and these springs serve also as a means for restoring many of the parts to initial position after each operation.

The rear portion of the frame is provided with inwardly-projecting brackets 55, to which is pivoted a hammer-lever 56, the upper end of the hammer-lever being curved forward and its impression-plate 57 being normally held a short distance from the imprinting-type. The hammer-lever is normally held from movement in the direction of the type, but when released from such controlling devices will be forced in the direction of the type by means of tension-springs 58, and the sheet of paper α , guided between the type-bars and the hammer, will receive the impression.

The lower end of the hammer-lever is provided with recessed sides, the inner wall of the lower portion of the recess being parallel with the rear wall of the hammer-lever, as indicated at 60. At the termination of the wall 60 the recess deepens abruptly, and from thence upwardly the rear wall 61 of the recess is gradually inclined to the back of the hammer-lever. Both sides of the hammer-lever are provided with corresponding recesses, and

said recesses are covered at the back of the hammer-lever by means of thin yieldable plates 62, that are secured to the hammer-lever near its lower end; but the lower edges of the plates terminate short of the lower end of the lever.

At the rear end of two of the levers 51 is rigidly secured a pair of upstanding arms 64, each carrying at its upper end an inwardly-projecting pin or antifriction-roller 65, adapted to the recess in the sides of the hammer-lever; but normally these pins are in the lower portion of the recesses and in engagement with the approximately vertical walls 60 thereof. When the strip 52 is depressed and the rear ends of the levers 51 are elevated, each pair of arms 64 will be elevated, and the pins carried thereby when raised above the top of the walls 60 will permit the operation of the spring 58 and the lower end of the hammer-lever will be drawn to the rear, while the upper end thereof will be forced forward and will press the paper against the type, or rather against the inked ribbon, which in turn makes contact with the type, and by adjusting the stress of the spring 58 the impact of the hammer may be increased or diminished, so that the necessary blow of sufficient force may be given for manifolding. After the forward imprinting blow of the hammers continued downward movement of the strip 52 will cause the pin 65 to continue upward movement against the inclined walls 61 of the recess until the pins pass out of the recess and engage with the back of the type-bar, this operation resulting in the gradual withdrawal of the hammer-lever from contact with the paper. When pressure of the finger-strip is relieved, the springs 53 will draw the rear ends of the levers 51 down, and the pins 65 will then slide on the rear face of the plate 62 until after passing beyond the lower edge of the plate the pins again enter the lower portions of the recesses and permit the hammer to assume initial position under the stress of the springs 58.

The frame of the machine is provided with a plurality of arms 70, which serve as supports for a pair of transversely-disposed parallel rails 71, on which is mounted a transversely-movable paper-carriage 72, the paper-carriage being adjustable laterally of the machine in order that any portion of its length may be in vertical alinement with the imprinting-type and the impression made at any point in the width of the sheet of paper.

The carriage is of simple construction and includes pendent hangers 73, forming supports for two rollers 74 75, which may be formed of or coated with a yieldable material in order to obtain a firm grip on the paper α , which passes between them. The hangers 73 are continued downward and form a support for a paper-roll 77. The hangers are preferably of the linked construction shown, so that the weight of the paper-roll holder serves to

draw the two paper-feeding rolls toward each other, and thus secure the necessary grip of the paper without the necessity of employing springs or similar devices for impelling the rollers toward each other, although springs 78 may be used, if desired. In the length of the forward roller 75 are a number of ratchet-wheels 80, the teeth of which do not project to the periphery of the roller, so that there may be any number of ratchet-teeth without danger of injury to the paper. With these ratchet-teeth of any one of the ratchet-wheels engages a pawl-bar 82, that is pivoted at its lower end to one of the operating-levers 51 and is held in contact with the ratchet-wheel by a spring 84. To accomplish adjustment of the paper-carriage, it is merely necessary to force the pawl-bar out of engagement with the teeth of the ratchet-wheel with which it is in contact and shift the carriage laterally until the paper is in the desired position, the pawl-bar being then allowed to come into contact with the nearest ratchet-wheel. On the downstroke of the operating-levers and during the imprinting operation the paper will be stationary, inasmuch as the pawl-bar merely clicks over the teeth of the ratchet-wheel; but on the return movement of the operating-lever the pawl-bar moves downward and turns the paper-feeding roller to the extent necessary to present a fresh portion of the paper in alinement with the hammers.

At the opposite sides of the frame of the machine are vertical arbors 88, on which are mounted ribbon-reels 89 of any ordinary construction, carrying a narrow inked ribbon which is guided by suitable metallic guides at a short distance from the face of the type-bars, the guides being cut away at the points in alinement with the type-bars and hammers.

The lower end of each arbor 88 carries a bevel-gear 90, which is engaged by a bevel-gear 91, mounted on a stud-bolt 92, that is secured to the frame, and on the forward face of the bevel-gear 91 is a crown-ratchet 93, with which engages a pawl 94, pivotally connected to one of the operating-levers 51 and held in operative engagement with the ratchet by means of a spring 95, it being understood that there is one of these pawls at each side of the machine. The side frames of the machine are provided with bearing-openings for the reception of small shafts 96, carrying cams 97 in alinement with the pawl-bars 94, and at the outer ends of the shaft 96 are small milled knobs 98, which may be turned, and by turning these knobs one or the other of the cams 97 may be moved in order to adjust one of the pawl-bars to inoperative position, while the other pawl-bar remains operative and imparts a step-by-step rotative movement to its associated ribbon-reel until all of the ribbon has been wound from the opposite reel. When this occurs, the pawl-bar of the full reel is moved to inoperative position, and the simi-

lar bar of the empty reel is allowed to come into engagement with its ratchet, the feeding of the ribbon being reversed.

Pivotally connected to the upper portion of the standards 44 are substantially U-shaped levers 99, which may extend from side to side of the machine, the lower rear ends of the levers being connected by a cross-bar 100, adapted to engage with the tails of the pawls 43 and serve by pressing the pawls to move them from engagement with the racks 42 of the type-bars and allow said type-bars to be restored to the lowest position by means of tension-springs 101. The forward ends of the U-shaped levers 99 are arranged for engagement with upstanding arms 102 on the operating-levers 51; but the parts are so constructed that the arm cannot engage the lever until after the imprinting operation has occurred, and then on the continued upward movement of the rear portion of the levers 51 the levers 99 will be operated and the pawls disengaged to allow the type-bars to fall.

Each of the segment-supporting standards 32 is provided on its front edge with a cam-surface 103, with which engages an antifriction-roller 104, carried by an arm 105, that is rigidly secured to one of the operating-levers 51, and the relation of the antifriction-roller to the cam-surface is such that immediately following the start of the downward movement of the finger-strip 52 the standards 32 will be forced away from the shaft 4, and the segment 34 will be disengaged from the pinion 35, and the parts will be held in readiness to permit the movement of the segment 34 to initial position as soon as the type-bar-holding pawls 43 have been released, the restoration of the segments 34 to initial position being accomplished by a spring 101, previously described.

The operation of the machine may be briefly described as follows: The totaling-disk being at zero position, the operator places his fingers on the several link belts at points determined by the numeral in the first row of the columns of figures to be added, and the construction of the machine is such that he may simultaneously operate all of the link belts for all of the figures in that row or may operate them one by one, starting from any point and commencing either in the units, tens, hundreds, or any other column, as desired. The movement is transmitted through the link belts to the sprocket-wheels 7 and thence by means of pawls 14 to ratchet-wheels 12 and gears 13. This movement is imparted through gears 16 to the totaling-disks 5, and the row of figures will appear at the display-opening 6. The transfer mechanism, which may come into play when the next horizontal row of figures is added, will operate to transfer tenths of revolutions through the disks in proper order. When the link belts are operated for the first row of figures, the sprocket-wheels 8 of the

proper columns will be actuated, and the movement will be imparted through pinions 35 to segments 34, and the type-bars will be elevated through the levers 39 until the proper type have been moved to imprinting position. The type-bars will be held in adjusted position by the pawls 43, and the paper being in position the machine is in readiness for the imprinting operation. The operator depresses the strip or bar 52. The pins or rollers 65 are moved up above the tops of the walls 60, whereupon the springs 58 impel the hammer in the direction of the paper and type and effect the desired impression. The downward movement of the finger-strip causes first the disengagement of the segment 34 from the pinion 35 by the travel of the antifriction-roller 104 on the cam-surface 103 of standards 32. This precedes or is coincident with the imprinting operation. As downward movement of the finger-strip continues the pins 65 ride up the inclined walls 61 of the recesses and move the hammer from imprinting position, while during this movement the arms 102 will engage the pawl-releasing pawls 99, and pawls 43 will be disengaged from the racks 42, allowing the type-bars to descend under the influence of the springs 101. This movement will be transferred to the segments, and the latter will be restored to initial position in readiness to be again engaged with the pinions 35 when the roller 104 passes from the cam-surface 103. After the pins 65 have passed beyond the spring-plates 62 the downward movement of the finger-strip is completed, and the strip may then be released. The springs 53 then operate to draw the rear ends of the levers 51 down, and pins 65 travel against the rear ends of the plate 62 until they pass beyond the lower edges of the plate, whereupon the springs 58 will move the lower ends of the hammer-lever to the rear. The pins 65 again enter the lower portions of the recesses, these members being restored to initial position. Downward movement of the rear ends of levers 51 causes the pawl-bar 82 to engage with one of the ratchet feed-rollers, and the paper is fed upward for a predetermined distance. During the same movement the pawl-bar 94 being connected to one of the operating-levers 51 at a point forward of the fulcrum of said lever will engage with the crown-ratchet 92 and effect feeding movement of the inked ribbon. The antifriction-roller 104 will then move from the cam-surface 103, and the segments will be again allowed to mesh with the pinions 35, all of the parts then being in readiness for another operation.

Should it be desired to imprint the total amount, a note is made of the total as it appears on the registering-disks, and the link belts are actuated in the same manner as for the addition of a horizontal row of figures, the imprinting operation being accomplished in the manner described.

Should it be desired to operate only the totaling-disks without keeping a record of the rows of figures, the finger-strip 52 is depressed and is held down by a turn-button 106 at the front of the machine. This holds all of the printing mechanism in inoperative position, and the apparatus may be used for the registration of a gradually-increasing total without movement of any of the parts of the imprinting mechanism.

Having thus described the invention, what is claimed is—

1. In a calculating and recording machine, a plurality of type-carriers, means for adjusting the same to present selected type at imprinting position, a spring-impelled impression-hammer, a manually-operated key normally holding the spring under stress, and the hammer away from the type, coöperative means between the hammer and the key for permitting movement of the hammer to imprinting position during the first portion of the stroke of the key, and means for moving the hammer away from the type and again placing the spring under stress during continued movement of the key in the same direction.

2. In a calculating and recording machine, the combination with a plurality of type-carriers, of means for adjusting the carriers to move selected type to imprinting position, a spring-impelled impression-hammer, a pivotally-mounted hammer-lever supporting the same, one end of said lever being provided with a recess and one wall of the recess being disposed in an oblique line to form a cam, and a manually-operable key having a pin or roller entering said recess thereby to permit movement of the hammers to imprinting position during the initial portion of the stroke of the key and to move the pin or roller into engagement with the cam and thereby disengage the hammer from the key during the following portion of the key-stroke.

3. In a calculating and recording machine, the combination with type-carriers, of means for moving type-carriers to adjust selected type to imprinting position, a hammer, a hammer-lever carrying the same, said hammer-lever being provided at its lower end with a pair of recesses, the inner walls of the upper portions of the recesses being disposed in oblique lines, and forming cams, a spring tending to move the hammer to imprinting position, a manually-operable key, a pair of pins or rollers carried by the key and entering said recesses.

4. In recording mechanisms, an impression-hammer, a pivotally-mounted supporting-lever therefor, a spring tending to move the lever to imprinting position, there being a recess at one end of said lever, and one wall of said recess forming a cam, a spring-plate secured to the lever, and forming a closure for the outer side of the recess, a manually-operable key having a pin entered in the re-

cess and adapted to travel first in contact with the walls of the recess and afterward in contact with the plate.

5 In recording mechanism, an impression-hammer, a pivotally-mounted lever carrying said hammer, said lever having at one end a pair of recesses, the walls of said recesses being disposed partly on vertical and partly on oblique lines, a spring-plate serving as one
10 wall of said recesses, and an operating-lever having a pair of pins or rollers entering the recesses and adapted to travel in engagement with the walls of said recesses during one movement of the key and in contact with the
15 spring-plate during the opposite movement of said key.

6. The combination with a plurality of type-bars, of a means for adjusting the type-bars to present selected type at the impression-point,
20 a rack carried by each bar, a pawl for each of the racks, a spring-impelled impression member, a key-lever controlling movement of said impression member to and from imprinting position during a single downstroke, and
25 means operable by said key for moving the pawls to released position.

7. In a calculating and recording machine, the combination with a plurality of vertically-guided type-bars, of means for moving the
30 type-bars to present selected type at the impression-point, racks carried by the type-bars, pawls engaging said racks, and serving to hold the type-bars in adjusted position, means for restoring the type-bars to initial position
35 when released from the pawls, a spring-impelled impression member, a key-lever for controlling the movement of said impression member, a pair of pivotally-mounted levers, means carried by the key for engaging said
40 levers, and a pawl-engaging rod secured to the levers and adapted to simultaneously move all of the pawls to release position.

8. In a calculating and recording machine, the combination with a plurality of movable
45 type-bars, of type-bar-guiding means, pinions receiving movement from the finger-actuated devices of the machine, segments engaging said pinions, and lever and link connections between each segment and its type-bar, means
50 for locking the type-bar in adjusted position, an impression member, a manually-operated key for controlling the movement of said impression member, and means controlled by said key for disengaging the segment and pin-
55 ion thereby to permit movement of the segment to initial position.

9. In a calculating and recording mechanism, the combination with a plurality of mov-

able type-bars, of a finger-actuated means, pinions receiving motion from said finger-actuated means, a segment in mesh with each pinion, a spring tending to hold the pinion and segment in engagement, a movable lever forming a support for said pinion, a spring-impelled impression member, a manually-operated key for controlling the same, and means
60 carried by said key for engaging the segment-supporting lever and moving the same to disengage the segment and pinion.

10. In a calculating and recording machine, a plurality of type-bars, pawl-and-rack mechanism for holding the same in adjusted position, a series of springs, a plurality of finger-manipulated mechanisms for imparting movement to the pinions, a segment in mesh with
75 each pinion, a pivotally-mounted lever supporting the segment and provided with a cam-face, a spring engaging said lever, a spring to hold the pinion and segment in mesh, an arm carried by the segment, a pivotally-mounted
80 lever, links extending between the opposite ends of the lever and the segment-carried arm and type-bar respectively, a spring-impelled impression member, a finger-key for controlling the movement thereof, means connected
85 to said finger-key for releasing the type-bar, and means carried by the key for engaging the cam-face of the segment-carrying lever and moving the same to disengage the segment and pinion.
90

11. In a calculating and recording machine, the combination with an imprinting mechanism, a paper-carriage adjustable transversely of the machine, a paper-feeding roller, a plurality of ratchet-wheels carried by said roller,
95 and a rack-bar adapted for engagement with any one of said racks and serving to feed the paper.

12. The combination in a recording-machine, of imprinting mechanism, a pair of transversely-disposed parallel rails, a transversely-adjustable carriage carried by the rails, a pair of paper-feeding rollers on said carriage, a paper-supply roller, and linked
105 connections forming a support for the paper-supply roller and serving to utilize the weight of the paper and roller in maintaining the feeding-rollers in close relation.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
110 the presence of two witnesses.

GEORGE RAINEY.

Witnesses:

SAMUEL RAINEY,
IRA A. WILLIAMS.