

No. 631,487.

Patented Aug. 22, 1899.

W. J. GORDON.

MACHINE FOR SEAMING METALLIC CAN BODIES.

(Application filed Oct. 5, 1898.)

(No Model.)

7 Sheets—Sheet 1.

Fig. 1.

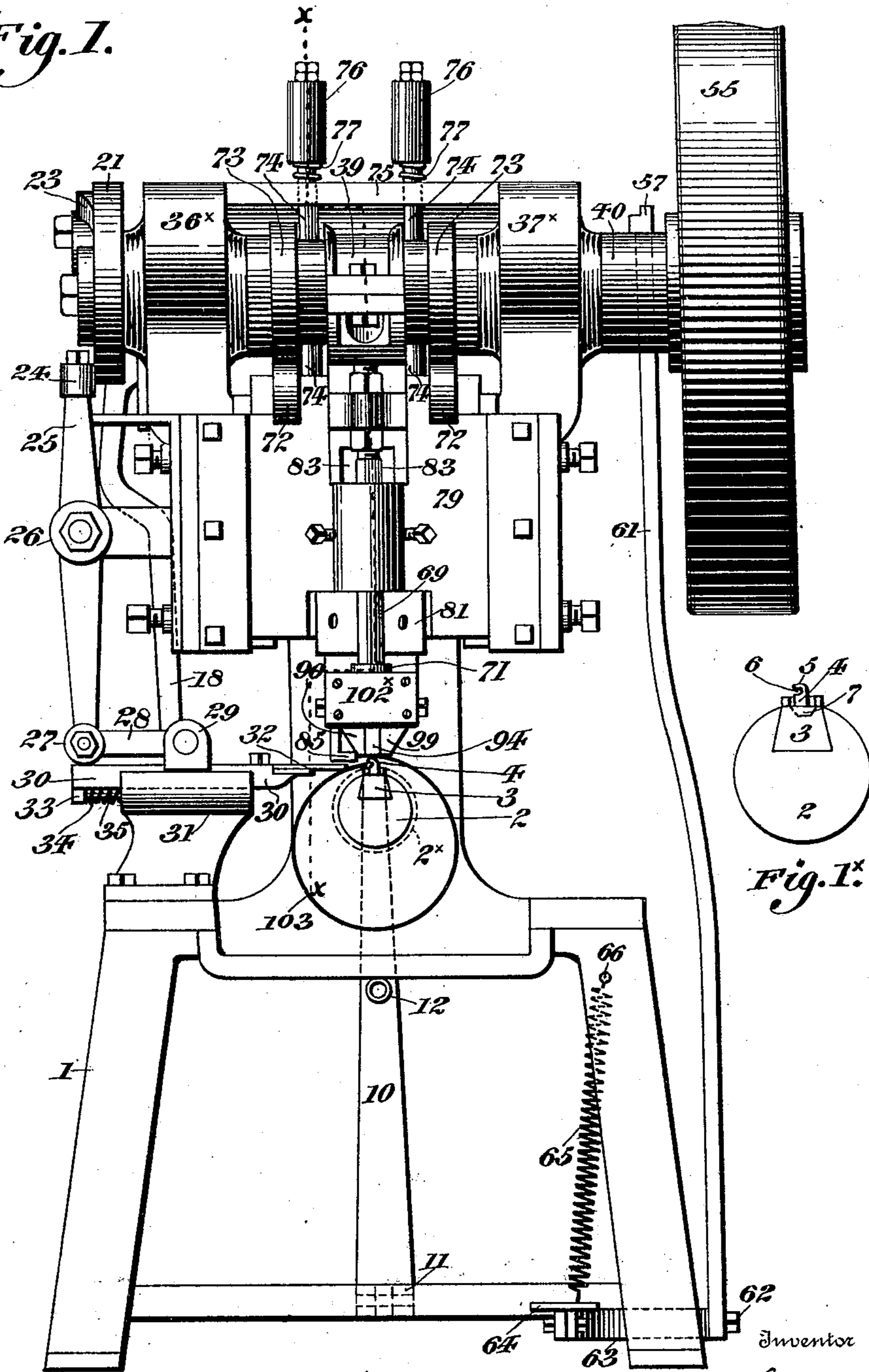


Fig. 1.*

Witnesses.

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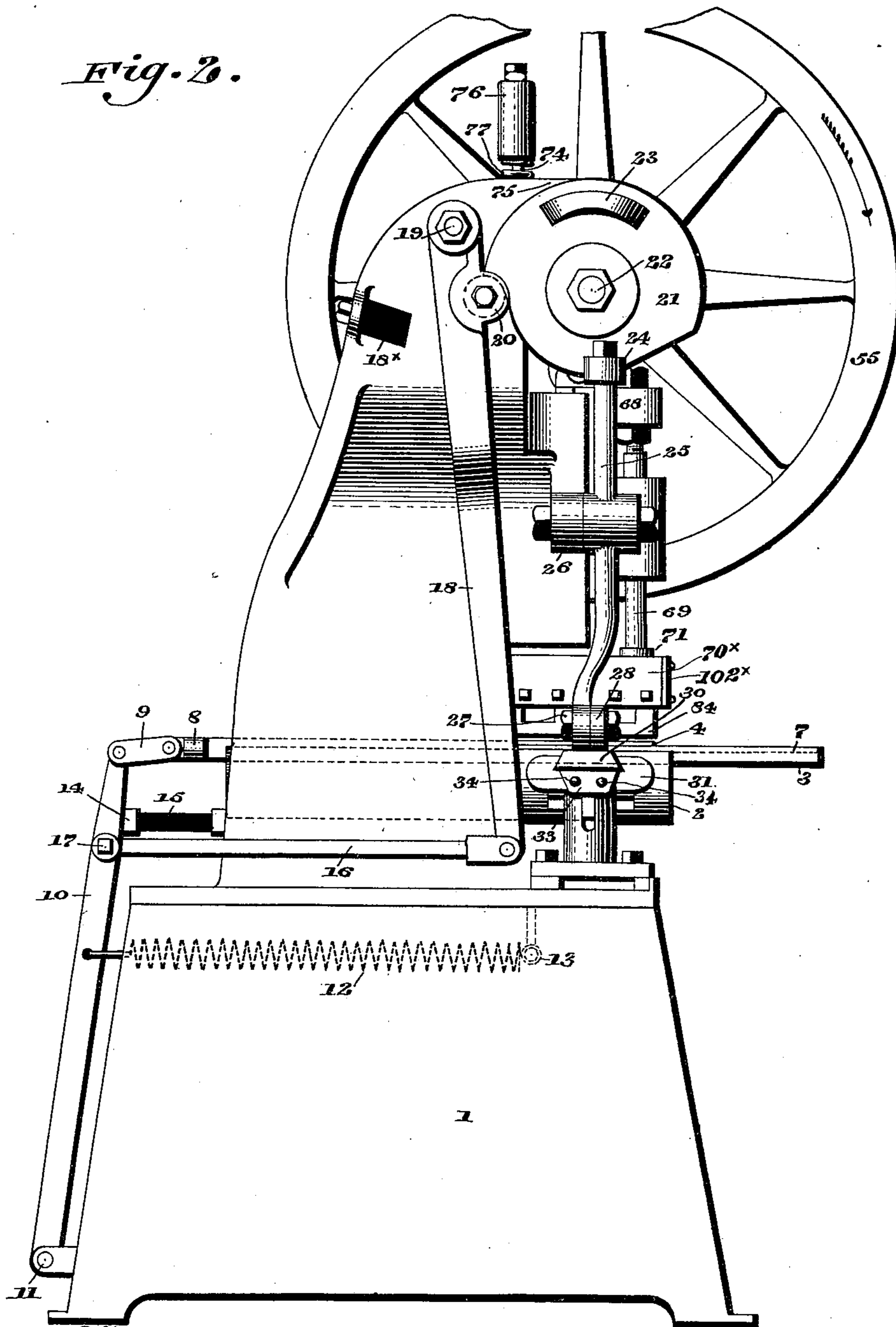
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7 Sheets—Sheet 2.

Fig. 2.



Witnesses

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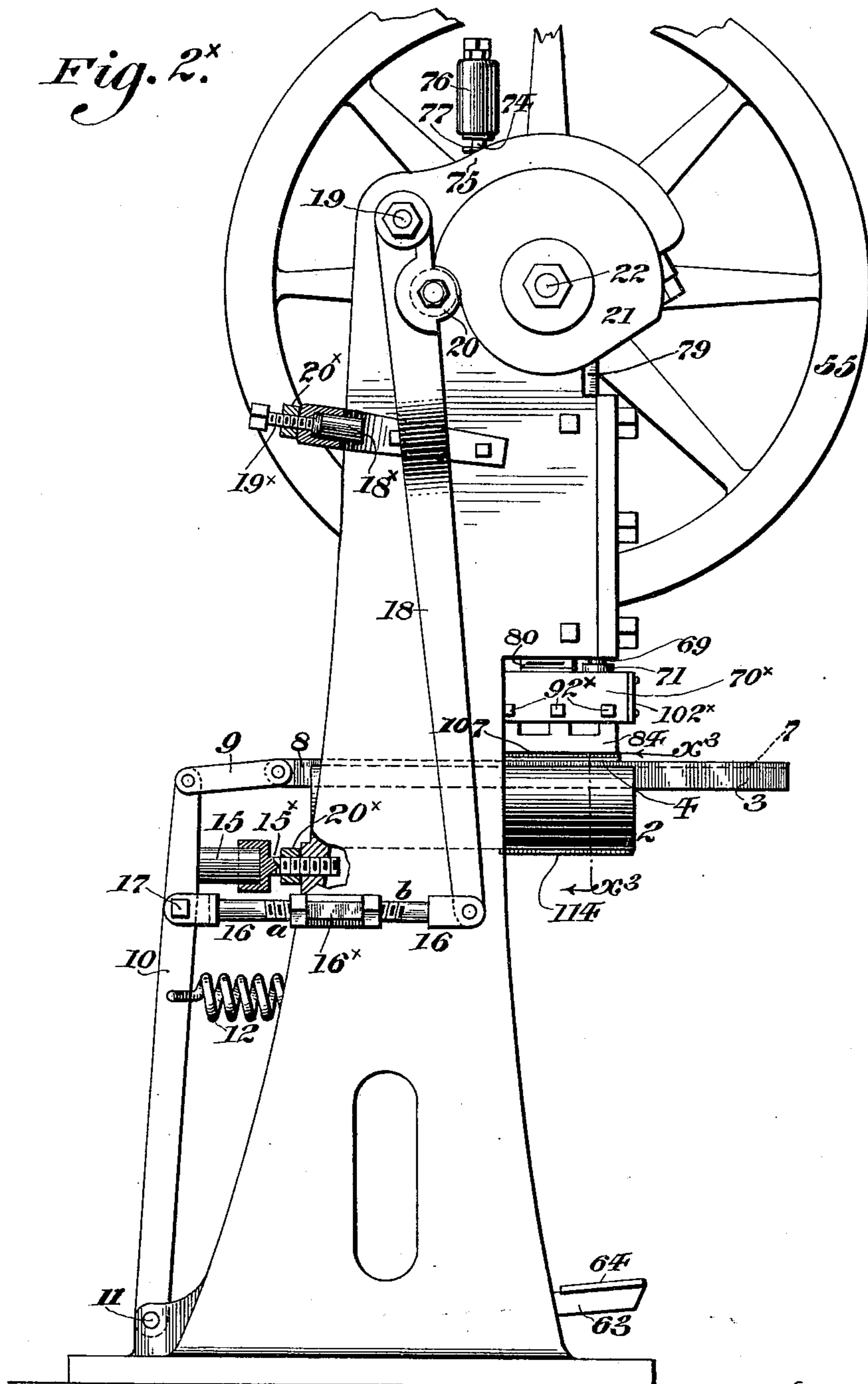
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7 Sheets—Sheet 3.

Fig. 2^x



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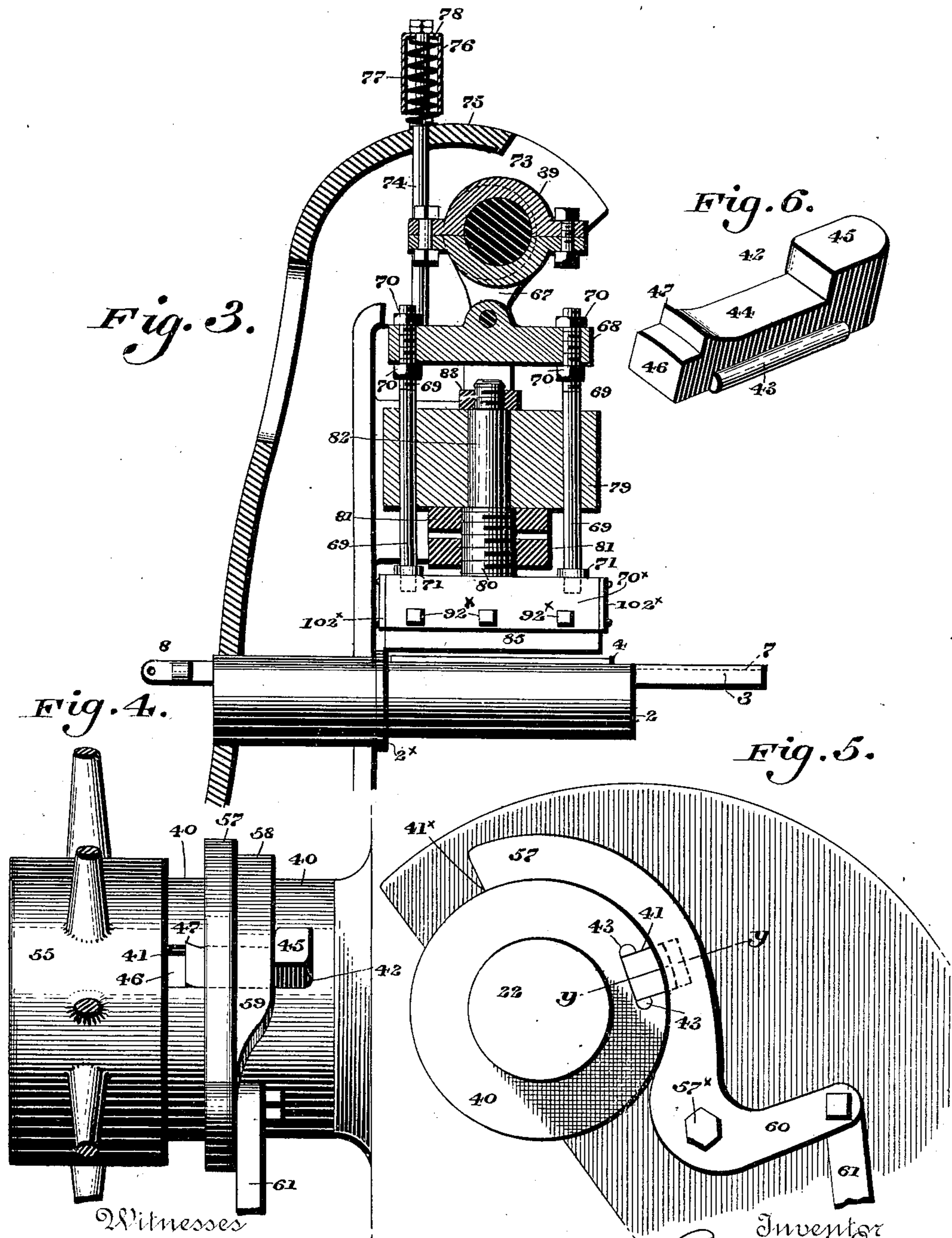
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(No Model.)

7 Sheets—Sheet 4.



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Fig. 7.

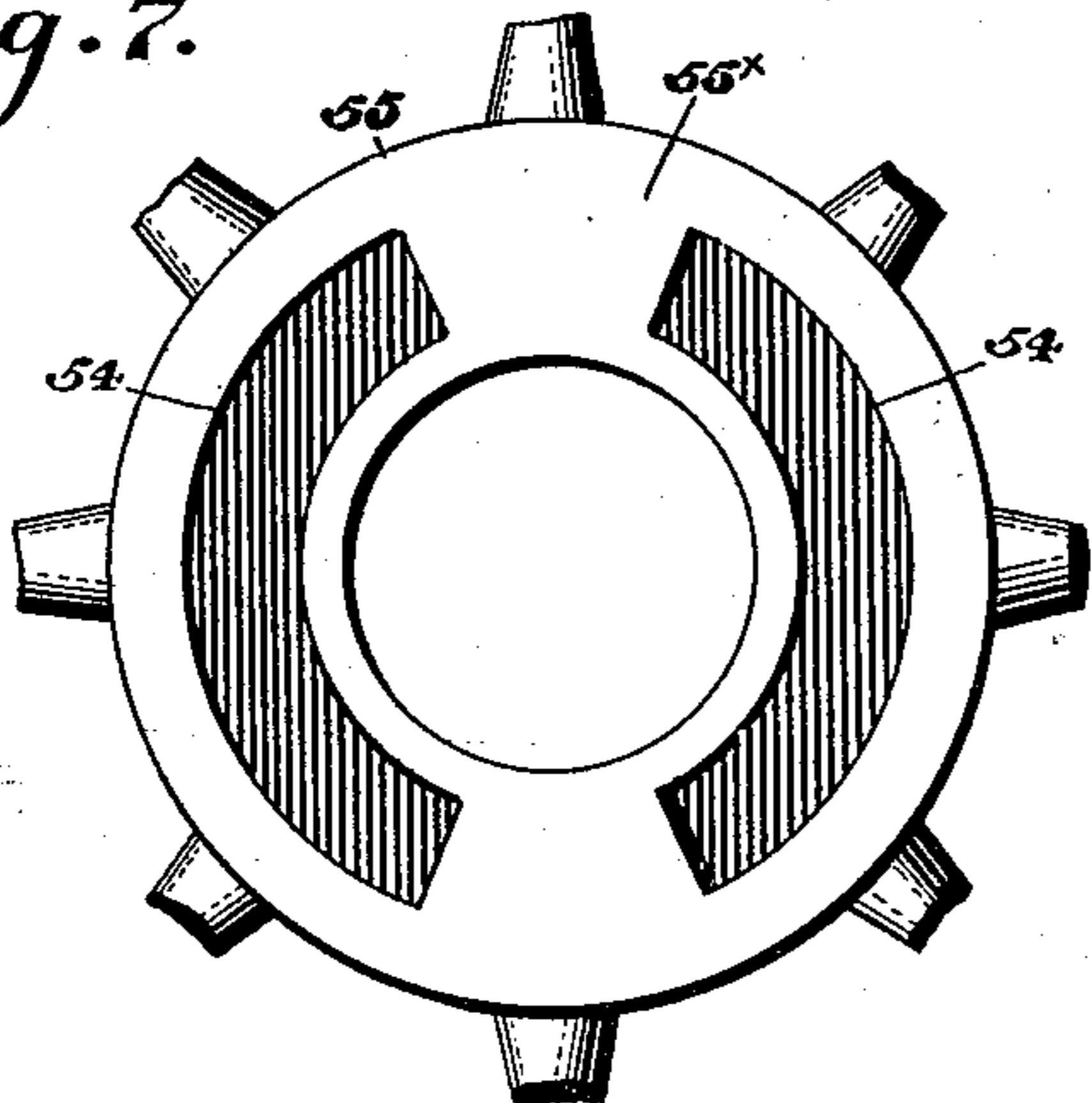


Fig. 8.

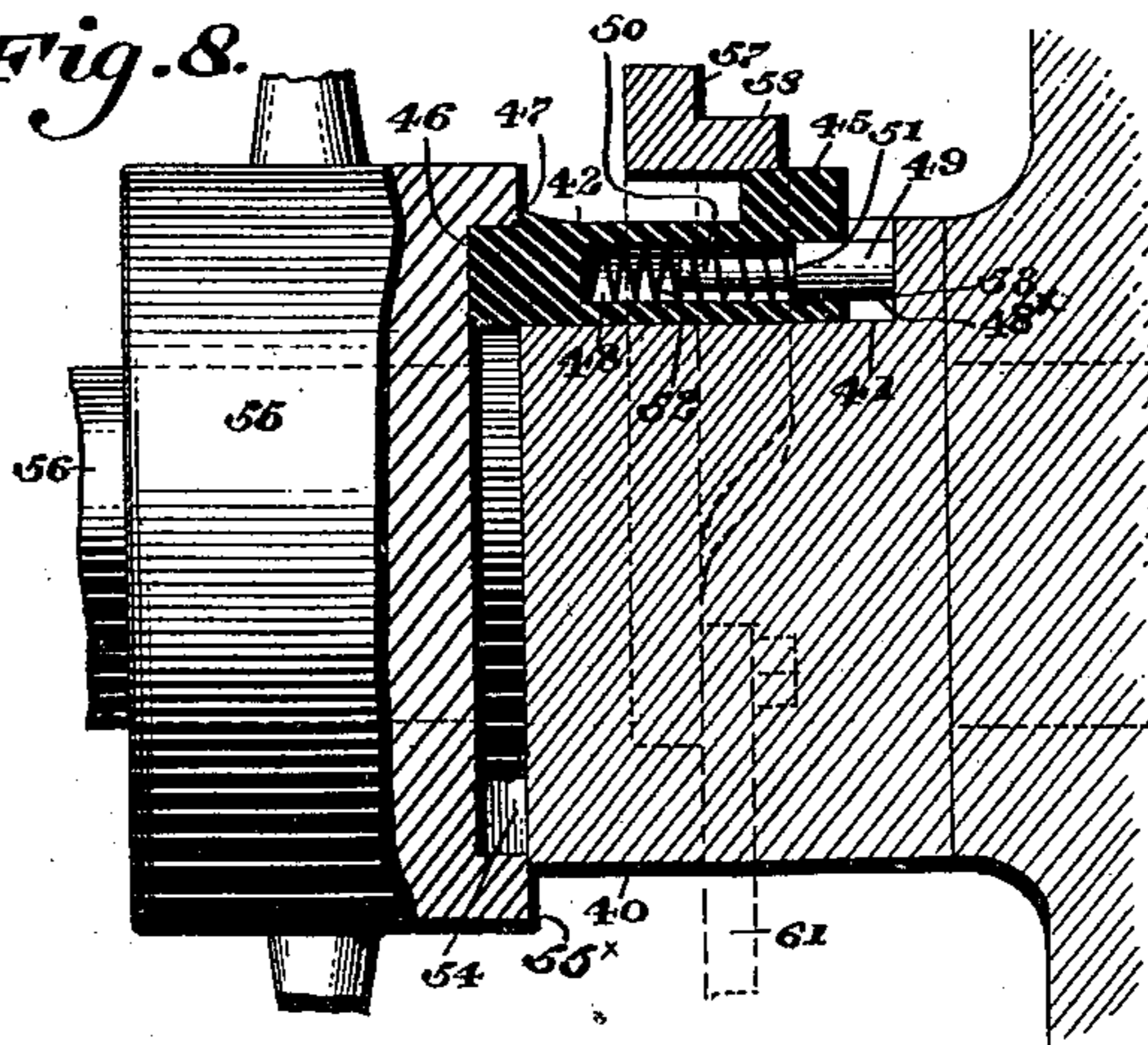


Fig. 9.

Fig. 10.

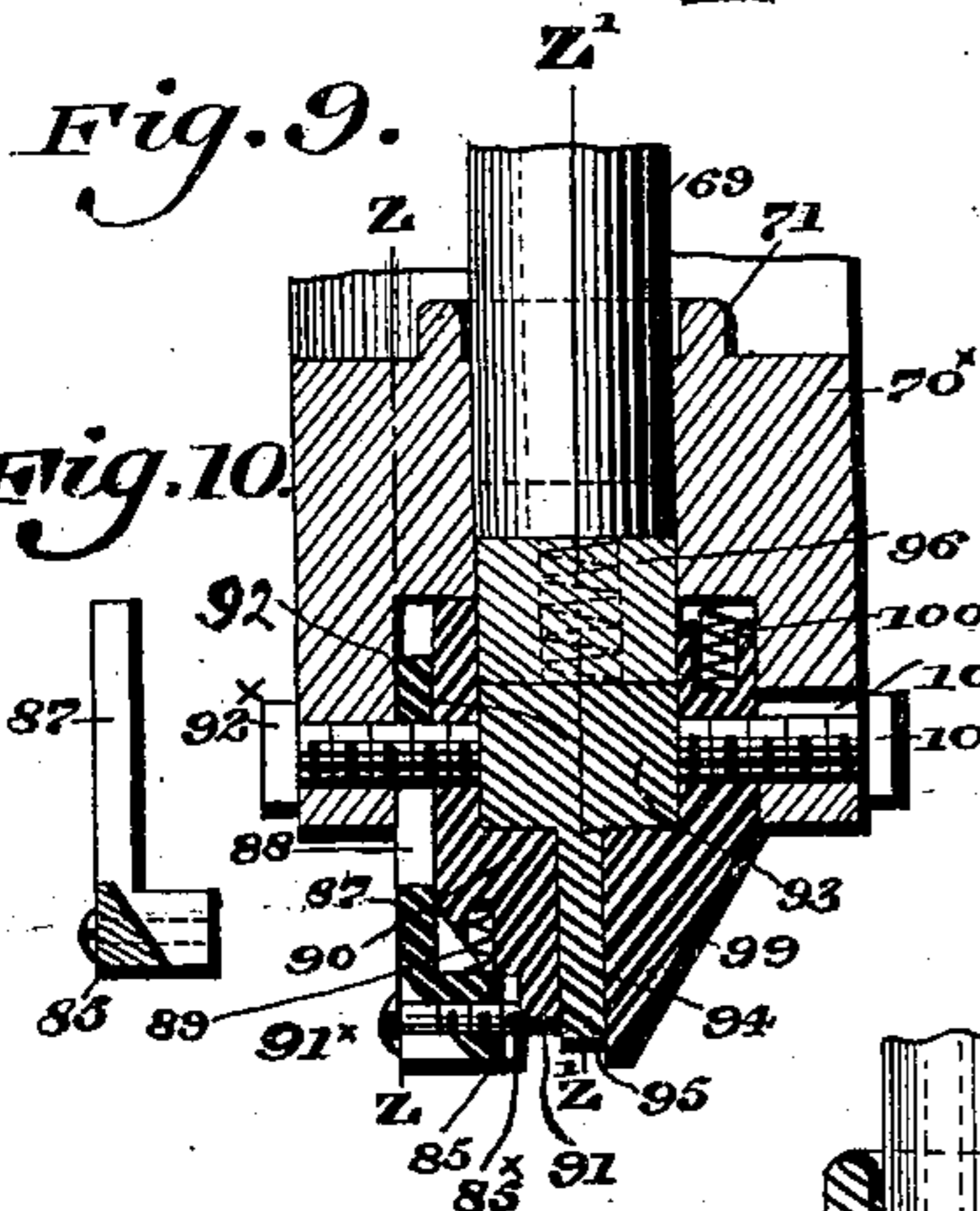
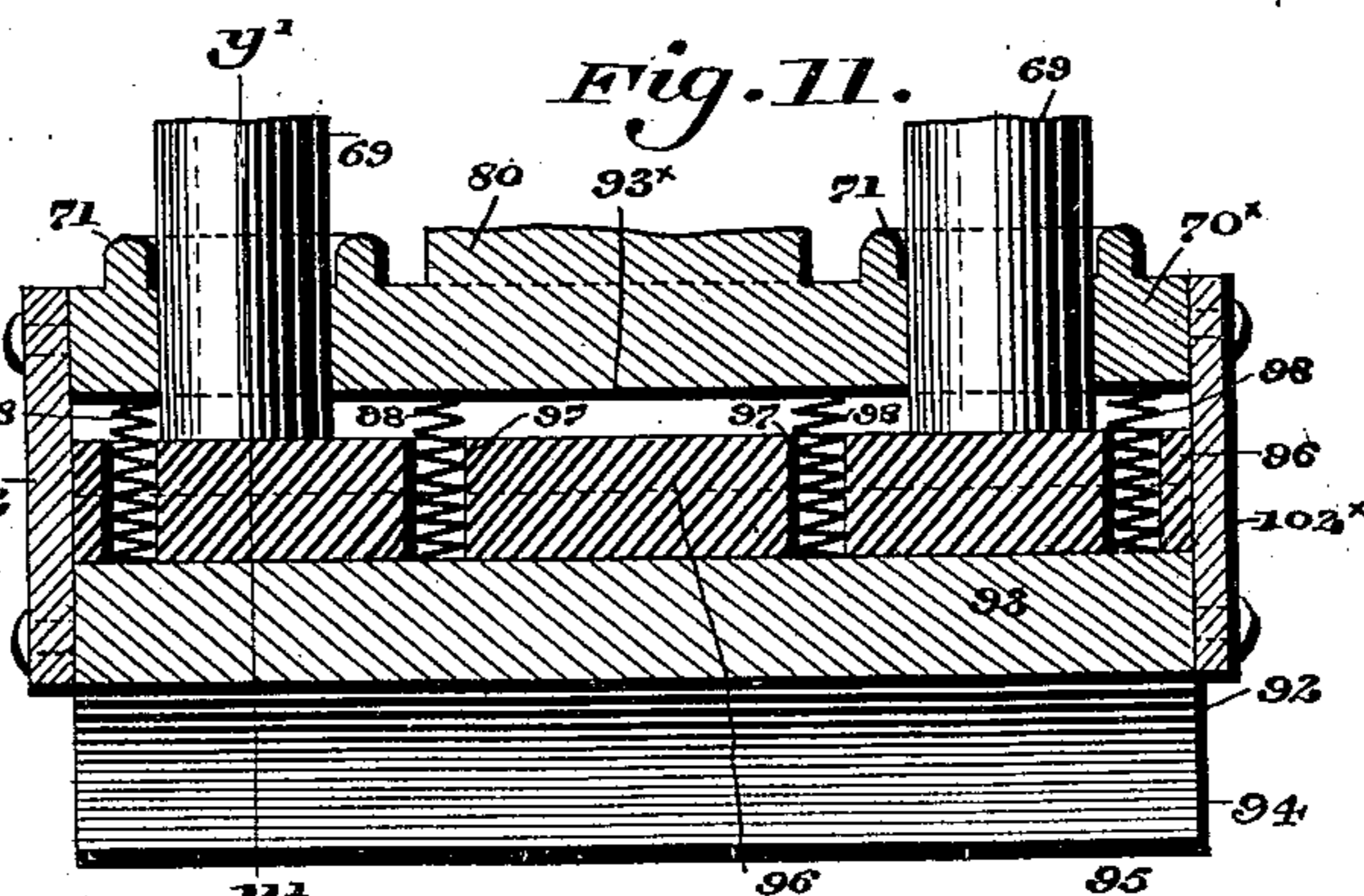


Fig. 11.



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Fig. 14.

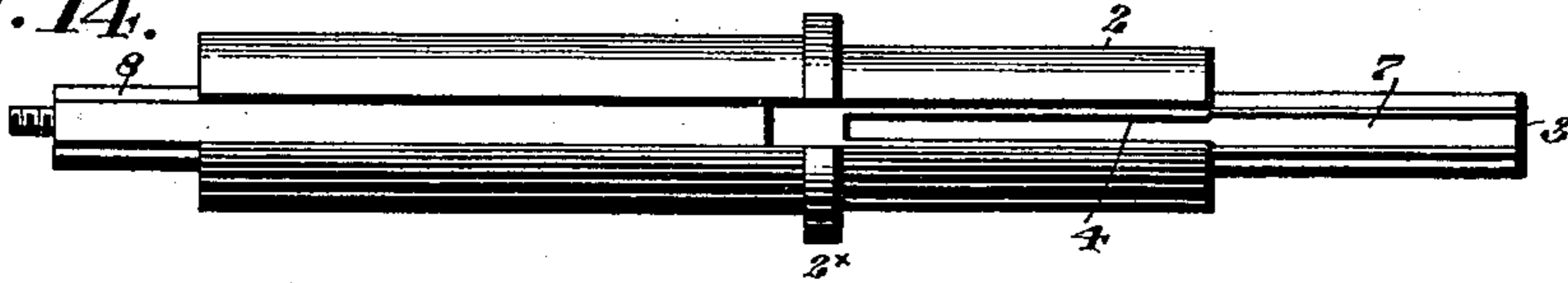


Fig. 16.

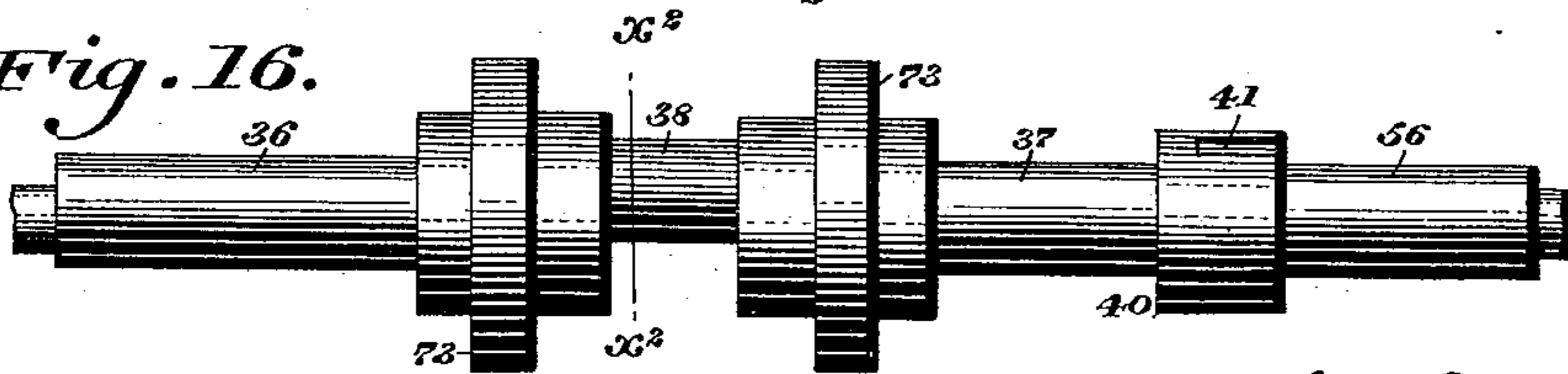


Fig. 15.

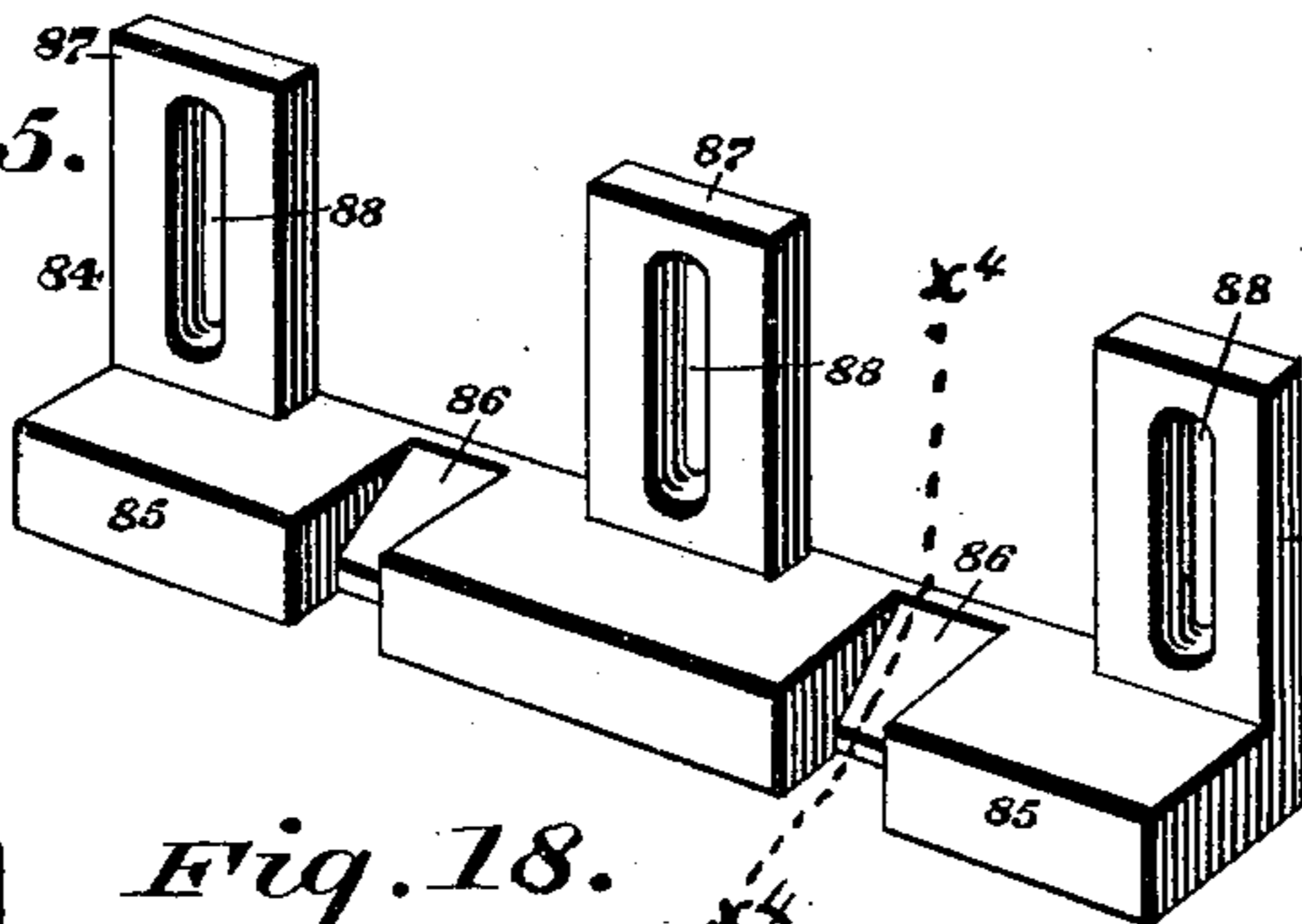


Fig. 21.

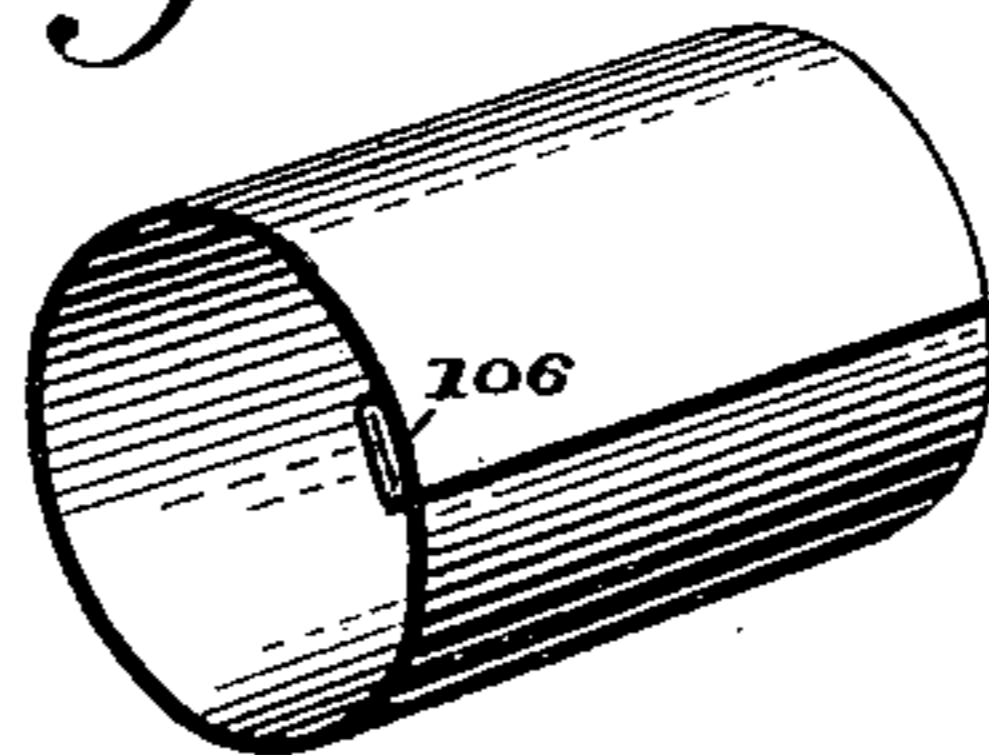


Fig. 17.

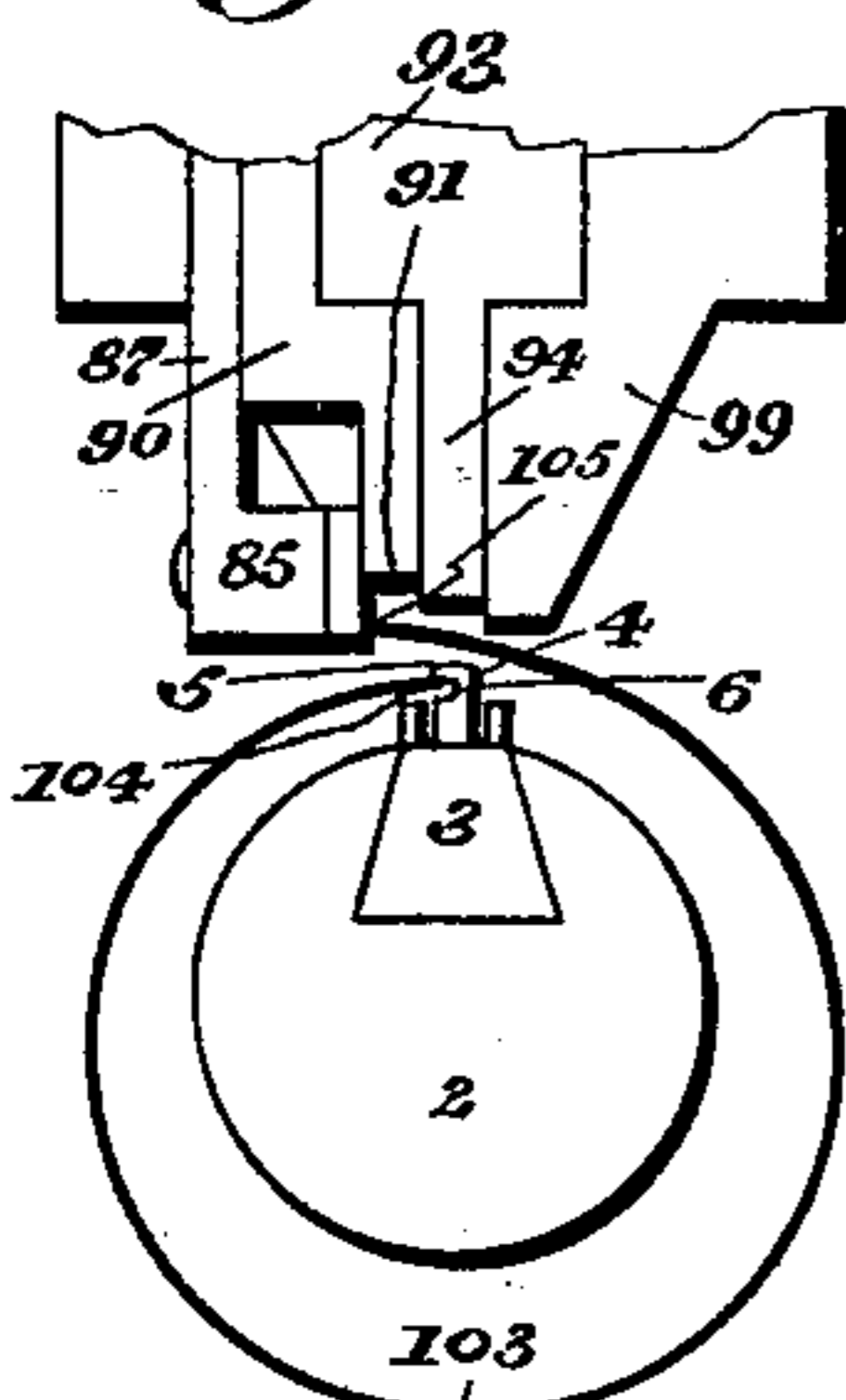


Fig. 18.

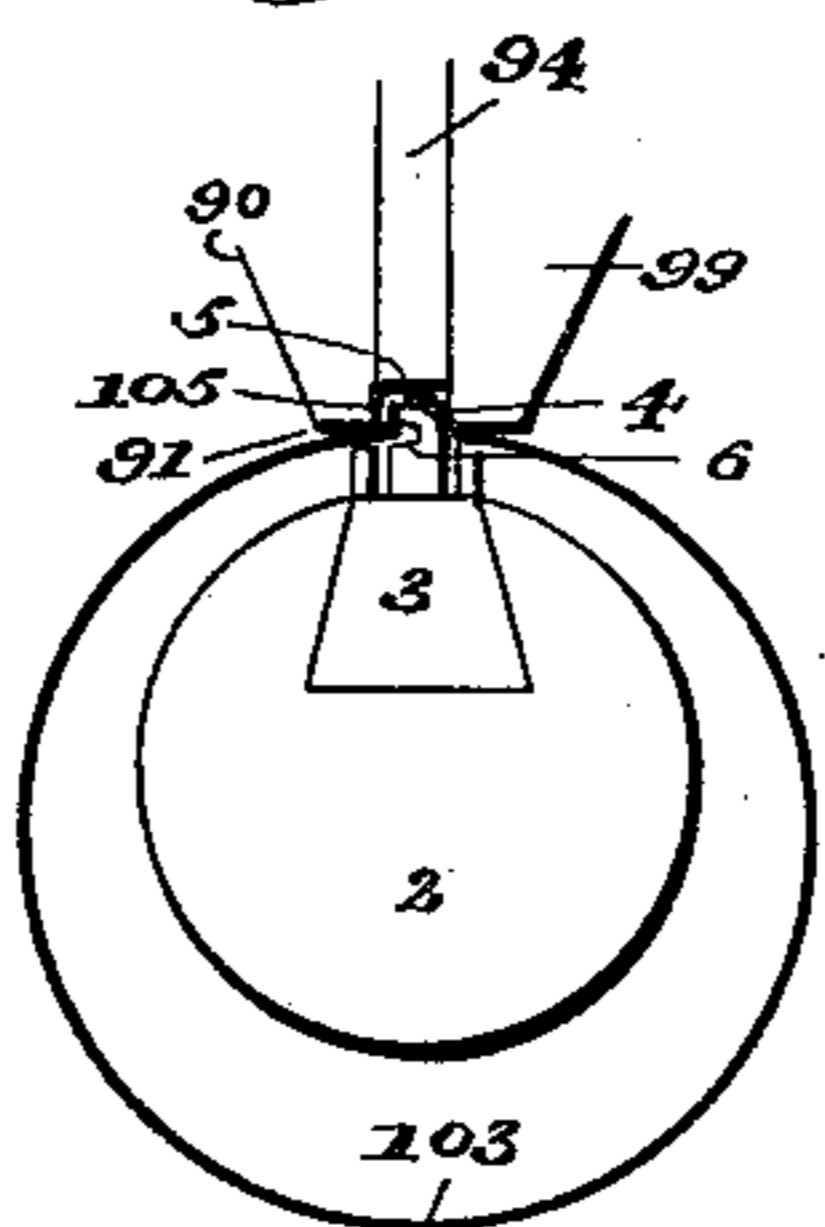


Fig. 19.

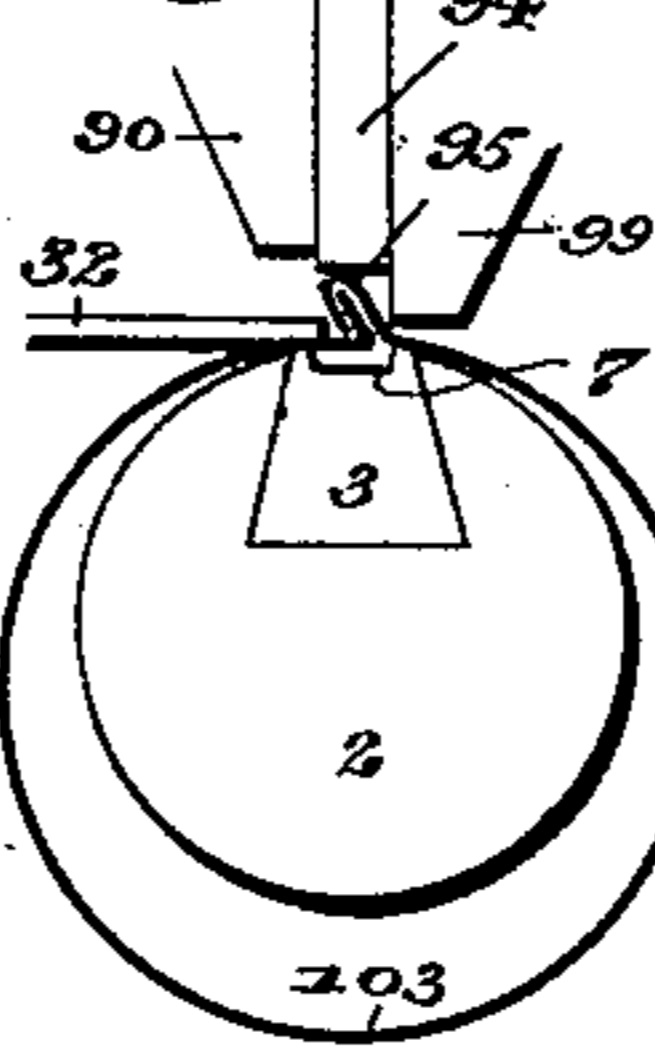


Fig. 19 1/2.

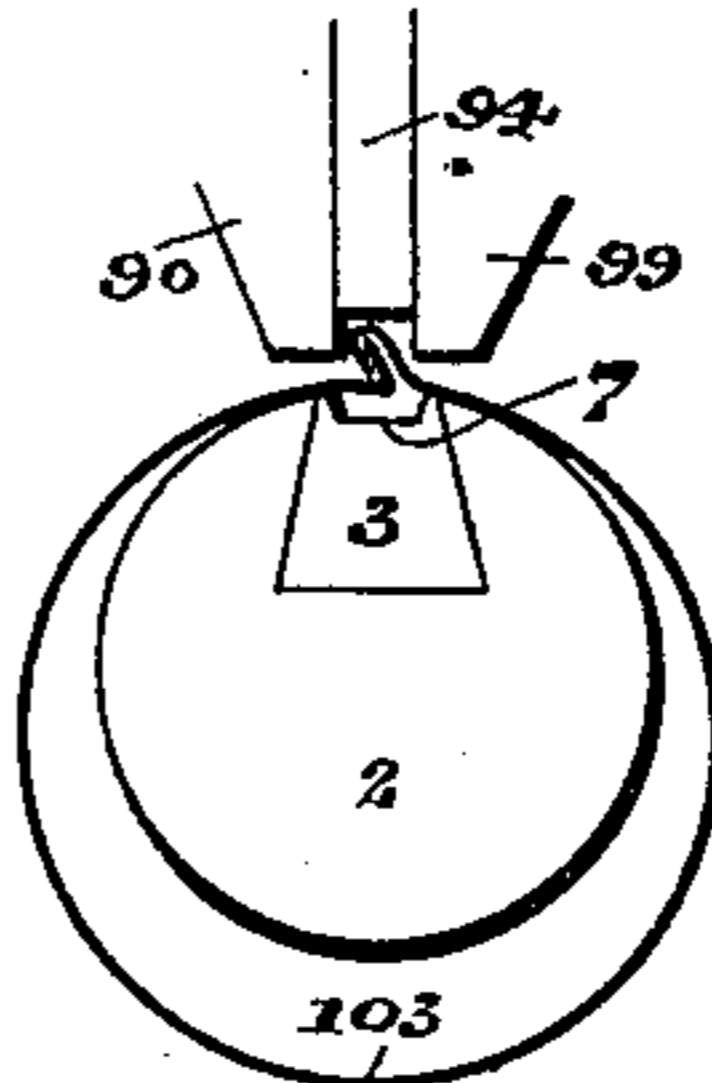


Fig. 20.

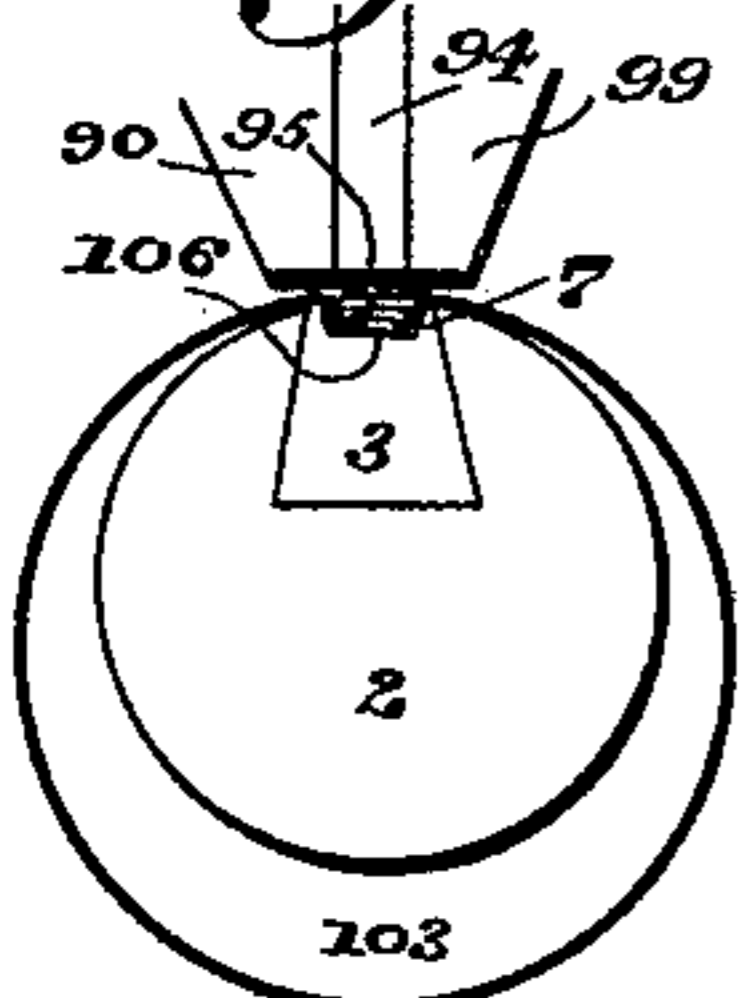
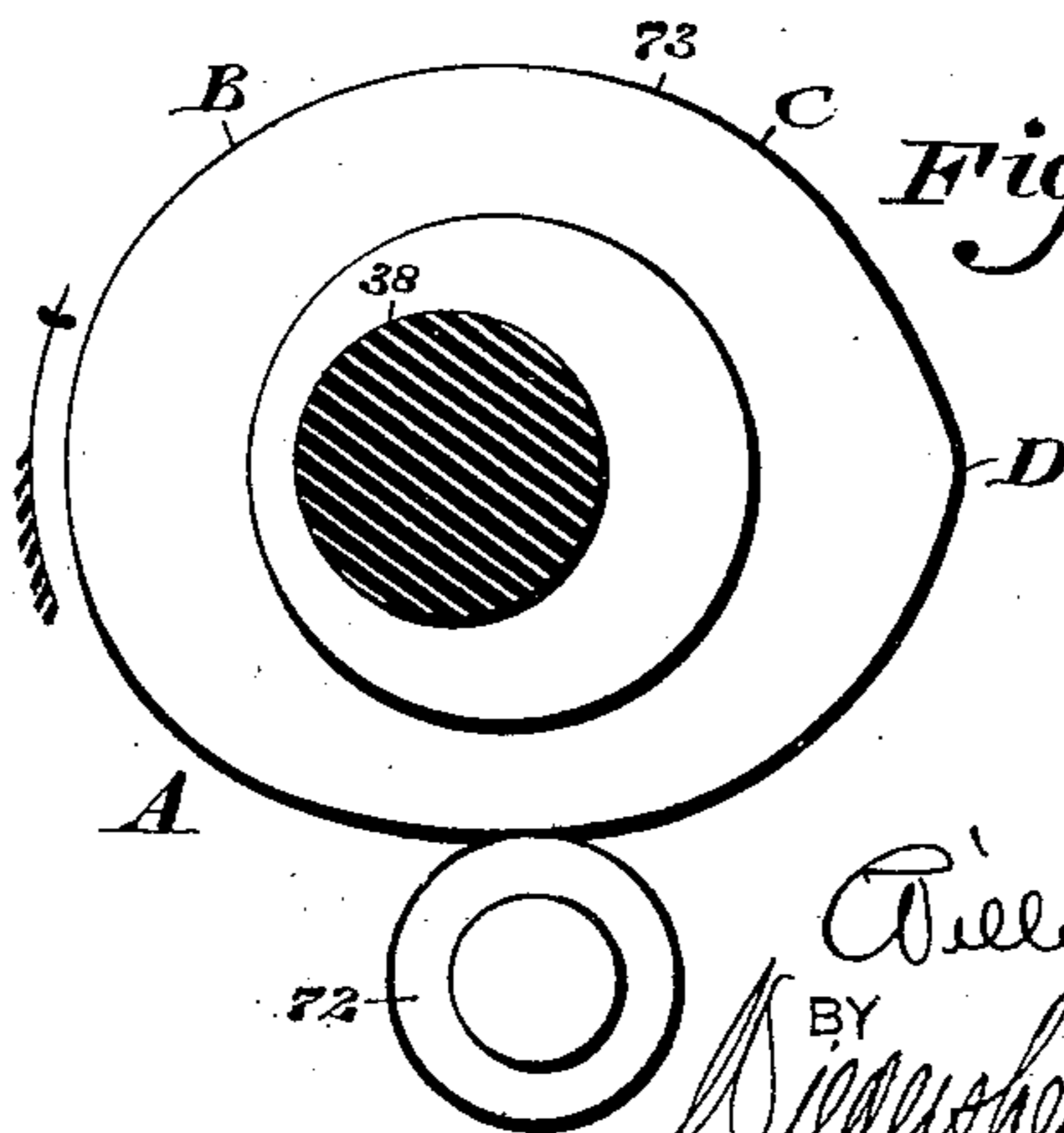


Fig. 22.



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MACHINE FOR SEAMING METALLIC CAN-BODIES.

SPECIFICATION forming part of Letters Patent No. 631,487, dated August 22, 1899.

Application filed October 5, 1898. Serial No. 692,731. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. GORDON, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Machines for Seaming Metallic Can-Bodies, &c., which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to machines for seaming metallic can-bodies, &c.; and it consists of various improvements upon the structures now in use, whereby a machine of great practical utility is produced, the movements of the various parts being simplified and the number of said parts being reduced to a minimum.

It also consists of the novel construction of clutch mechanism, whereby the machine can be readily started and stopped by the depression of a treadle or similar device.

It also consists of novel means of operating the tucking device.

It also consists of a novel construction of an adjustable seaming-head, in which a fixed and movable jaw are employed in conjunction with a movable hammer, suitable provision being made for actuating the above parts and for causing the same to be restored to their normal positions.

It also consists of novel means for operating the sliding bar which carries the dies by means of which the can is formed and seamed.

It also consists of the novel construction of die attached to said sliding bar, whereby better results are attained than heretofore.

It also consists of novel means for adjusting the seaming head and hammers according to requirements.

It also consists of a novel construction of cam-shaft, upon which the principal operative parts of the device are mounted.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a front elevation of a machine for seaming metallic can-bodies, &c., embodying my invention. Fig. 1^x represents, on an enlarged scale, an end elevation of a portion of Fig. 1. Fig. 2 represents a side elevation of the same. Fig. 2^x represents a side elevation showing adjustable buffers and an adjustable link. Fig. 3 represents a partial section taken on line xx , Fig. 1. Fig.

4 represents, on an enlarged scale, a detached view showing a side elevation of the clutch mechanism, the lever actuating the same, and a portion of the fly-wheel adjacent thereto. Fig. 5 represents an end elevation showing the clutch-arm and clutch-bolt in their relative positions to the crank-shaft, the fly-wheel having been removed. Fig. 6 represents, on an enlarged scale, the clutch-bolt removed. Fig. 7 represents a side elevation of the face of the fly-wheel, showing the recesses or dies which are adapted to be engaged by an end of the clutch-bolt when it is desired to start the machine. Fig. 8 represents a partial section on line yy , Fig. 5, showing the mechanism for operating the clutch-bolt and a portion of the fly-wheel to which the same is applicable. Fig. 9 represents a section on line $y'y'$, Fig. 11. Fig. 10 represents a section on line x^4x^4 , Fig. 15, of the adjustable guide or gage employed, the same being shown as removed from its normal position. Fig. 11 represents a section on line $z'z'$, Fig. 9. Fig. 12 represents a section taken in part on line zz , Fig. 9. Fig. 13 represents a bottom plan view of the seaming-head with the parts in assembled position as shown in Fig. 9. Fig. 14 represents a plan view of the seaming-form removed, showing also the sliding bar therein. Fig. 15 represents, on an enlarged scale, a perspective view of the adjustable gage or guide removed, which is best seen in Figs. 9, 10, and 12. Fig. 16 represents a side elevation of the crank-shaft, its adjuncts being removed therefrom. Figs. 17, 18, 19, 19 $\frac{1}{2}$, and 20 represent end views of the seaming-form, the adjustable head, and sliding bar which carries the dies, showing a can-body in the various steps of its manufacture from the bent blank to the finished can. Fig. 21 represents a perspective view of a finished can. Fig. 22 represents a section on line x^2x^2 , Fig. 16, showing the shape of one of the cans and a roller to which the same is applicable. Fig. 23 represents a vertical section on line x^3x^3 , Fig. 2^x, on an enlarged scale, showing a metallic blank from which the body portion of a can is formed supported upon the horn or seaming-form. Fig. 24 represents a vertical section on line y^2y^2 , Fig. 23. Fig. 25 represents a plan view of the seaming-form seen in Fig. 23 on a reduced scale. Figs. 26 to 29,

inclusive, represent end elevations of certain detached portions of the machine on an enlarged scale, illustrating the successive steps in the formation of a seam as produced by the machine embodying my invention.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates the framework of the machine, in the upper portion of which is mounted or otherwise secured the horn or seaming-form 2, which is provided with a shoulder 2^x, which serves as a stop against which the edge of a blank is adapted to be placed, said horn having a V or other shaped groove therein, in which reciprocates the sliding bar 3, which latter has the gage-die 4 mounted thereon, the length of the same in the present instance being substantially the same as the distance from the shoulder 2^x to the right-hand end of the seaming-form 2, as will be understood from Figs. 1, 1^x, 17, and 18. The said die 4 has a laterally-deflected lip 5 and a groove 6 immediately thereunder, as will be understood from Fig. 1^x, said groove 6 being adapted to receive an edge of the can-blank in the first step of its manufacture, as will be hereinafter explained. 7 designates a recess or depression in said sliding bar 3, which extends from the end of the latter to substantially the point where the lip 5 begins, as will also be understood from Figs. 2, 3, and 14. The extremity 8 of said sliding bar has pivotally attached thereto an end of the link 9, the other end of the latter being pivoted to the end of the lever 10, the lower end of which latter is pivoted to a suitable fixed point 11.

14 designates a boss or projection on the lever 10, which is adapted to contact with the buffer 15, which is secured to a suitable portion of the framework, whereby any serious shock or concussion is prevented.

16 designates a link, which has one end pivoted to the lever 10 at the point 17, the other end of said link being pivotally attached to the lever 18, which is fulcrumed at its upper end at the point 19, said lever being provided with a roller or projection 20, which is adapted to contact with the working face of the cam 21, which is mounted upon the shaft 22, the construction of which latter will be understood from Fig. 2, the lever 18 being prevented from any shock by means of the buffer 18^x, which may be of rubber or other suitable material.

The exterior face of the cam-disk 21 is provided with a curved projection 23, which itself serves as a cam and is adapted to contact at intervals with the end 24 of the lever 25, which is fulcrumed to a suitable bracket or support 26, said lever being provided at the point 24, if desired, with a suitable anti-friction-roller or similar device. The end 27 of said lever has a link 28 pivoted thereto, the other end of said link being pivotally attached to the lug 29 on the plate 30, the latter moving in suitable ways or guides 31 and having

secured thereto the tucker 32, whose function will be hereinafter explained.

33 designates a lug or ear which depends from the plate 30 and has attached thereto the rods or stems 34, which are surrounded by the coil-springs 35, one end of which rests against the ways 31, while the other ends contact with said lugs 33, the normal tendency of said springs being to always force the tucker 32 outwardly.

Referring now to Fig. 16, the construction of the crank-shaft 22 will be described, the same having the bearings 36 and 37, which are mounted in the boxes 36^x and 37^x, the space intermediate said bearings being occupied by the disks 73, which serve as cams or eccentrics, whose contour is seen in Fig. 22, and have secured therebetween the crank 38, which latter has a strap 39 mounted thereon. 40 designates an enlarged cylindrical portion of said shaft which is intermediate the bearing 37 and the portion 56 upon which the fly-wheel 55 is mounted, said portion 40 having therein a groove 41, in which is adapted to slide the clutch-block 42, the construction of which will be best understood from Fig. 6, the same consisting of the body portion 44, to the lower edges of which are attached the wings or ribs 43, which slide in suitable ways in the portion 40, as will be understood from Figs. 4 and 5, said clutch-block being further provided with the raised head 45, the nose 46, and the upwardly-projecting shoulder 47. 48 designates a longitudinally-extending cavity in said clutch-bolt 42, within which is contained the pin 48^x, which has an enlarged portion 49 and a reduced portion 50, said pin projecting into the cavity 48 and being held in position by means of the spring 52, which has one end abutting against the shoulder 51, while its other end contacts with the base of said cavity 48, thereby normally tending to keep the enlarged head or end of said pin against the shoulder 53, as will be understood from Fig. 8. 54 designates recesses in the face 55^x of the fly-wheel 55, which is adjacent to the nose 46 of said clutch-bolt when the parts are assembled, as will be understood from Figs. 7 and 8, the engagement of said nose 46 with the recesses 54 throwing the machine into operation, as will be hereinafter explained, said fly-wheel being continuously rotated upon the bearing 56, the fly-wheel and shaft being shown in Fig. 8 as revolving in unison, while in Fig. 4 only the fly-wheel 55 is revolved. 67 designates a clutch-arm which is provided with a curved face 59, which serves as a cam and is adapted to engage the head 45, and thus move the nose of the clutch-bolt out of engagement with the recesses 54, as is best seen in Fig. 4, said clutch-arm having its free end 41^x serving as a brake by its contact with the portion 40 and being fulcrumed at the point 57^x and having attached thereto the arm 60, which is pivoted to the lever 61, the lower end 62 of the latter being pivoted to the bar 63, which is suitably fulcrumed and serves as

a treadle and has mounted thereon the plate 64, the normal position of the parts being always assured by means of the springs 65, which have one end attached to said treadle, while the other end is attached to any fixed point, as 66.

Referring now to Fig. 3, the mechanism for actuating the seaming-head will now be described. 67 designates a lug attached to the under side of the strap 39, said lug being omitted from Fig. 1 for clearness of illustration and being pivoted to the head 68, through which passes the plungers 69, the position of said plungers relative to said head being always assured by means of the nuts 70, the ends of said plungers entering the upper portion of the head 70^x, which is provided with the upwardly-extending cups 71, forming increased bearings or guides for the plungers, whereby the possibility of said plungers 69 leaving said head 70^x is prevented. 72 designates rollers which are mounted in the upper portion of the slide 79, said rollers being adapted to be in contact with the cams 73, (best seen in Figs. 1, 16, and 22,) whereby the rotation of said cams will impart a downward movement to said slide 79, the upward movement of the latter being caused by means of the rods 74, which have their lower ends attached to said slide 79, as best seen in Fig. 1, while their upper ends pass through the top 75 of the frame and have secured thereto the shell or cage 76, within which is contained the springs 77, one end of the latter abutting against the top 75, while its other end is in contact with the top 78 of the shell 76, whereby it will be seen that the normal tendency of said springs 77 will be to lift the slide 79 upwardly as soon as the pressure of the cams 73 upon the rollers 72 is removed to a sufficient extent by the rotation of said cams. 80 designates a threaded stem rising from the head 70^x, as will be understood from Figs. 3, 11, and 12, said stem 80 being engaged by the nut 81, upon which rests the slide 79, through which the smooth portion 82 passes, the latter being held in proper position by means of the nut 83, which engages the upper threaded portion of said stem 82, whereby it will be seen that any desired adjustment in either direction can be given to the slide 79 by manipulating the nuts 81 and 83, whereby a different extent of movement will be imparted to the head, as will be explained. 84 designates an adjustable gage or guide employed, the same being shown removed in the detail view in Fig. 15 and consisting of the foot or base portion 85, which may have a facing-piece 85^x attached thereto, as seen in Fig. 9, said foot being provided with the openings or recesses 86 therein and having projecting upwardly therefrom the arms 87, which are provided with the slots 88, said gage being held in its normal position by means of the spring or springs 89, whose location is seen in Fig. 9, and guided by the bolts 92^x, passing through said slots 88, but not engaged in the

portion 93 of the seaming-hammer. 90 designates a fixed or immovable jaw of the seaming-head, the same having the working face or edge 91, the position of the adjusting-gage 84 relative to the fixed jaw 90 being readily adjusted, as will be understood from Fig. 9, by manipulating the screws 91^x. 92 designates the seaming-hammer, the same consisting of the body portion 93, from which depends the blade or hammer proper, 94, the same having the working face 95. 96 designates a suitable bar which rests upon the body 93 of said hammer and which has therein the holes 97, in which are seated the springs 98, as will be understood from Fig. 11, one end of the said springs abutting against the body portion 93, while the other end abuts against the upper portion 93^x of the head 70^x, the ends of the plungers 69 being adapted to contact with the bar 96, as will be hereinafter explained. 99 designates a movable jaw which occupies the position relative to the movable hammer best seen in Fig. 9, the same having the spring 100 in the upper portion thereof, which rests in a suitable cavity and is adapted to normally force the movable jaw downwardly, the latter being held in position by means of the bolts or studs 101, which move in the slot 102 in the side of the seaming-head, the contact of the bolts 101 with the walls of the slots through which they pass limiting their movement. 102^x designates plates which are secured to the front and rear of the seaming-head and serve to hold all the parts contained therein in their normal and proper positions.

Referring now to Figs. 17 to 20, inclusive, in which are shown diagrammatic views illustrative of the different steps of the formation of a finished can-body, 103 designates a blank for the can, which is bent into substantially cylindrical shape prior to being seamed and formed, the end or edge 104 of said blank being inserted in the groove 6 of the die 4, while the other edge 105 of the blank is passed up over said die 4 and caused to contact with the foot of the gage 85 in the initial step of the operation, the succeeding steps to be hereinafter explained.

The operation is as follows, it being understood that the fly-wheel 55 is always revolving and that normally the position of the nose 46 of the clutch-block 42 relative thereto is as shown in Fig. 4: If now the treadle 63 is depressed, the portion 58 will by reason of its intermediate connections be lifted out of engagement with the head 45 into the position seen in Fig. 8, whereupon the tension of the spring 48 will cause the clutch-bolt 42 to shoot into one of the recesses 54, and the parts will assume the position seen in Fig. 8, and the rotation of the fly-wheel 55 will be instantly transmitted to the part 40 and also to the crank-shaft 22, as will be understood from Fig. 16, the parts being now in the position seen in Fig. 17, and the rotation of the latter will through the medium of the cams 73 cause

the slide 79 and the seaming-head to descend, and the face of the fixed jaw 91 contacting with the portion 105 of the blank 103, as shown in Fig. 17, will bend the lapped edges of the seam into the position seen in Fig. 18, and at substantially the period that this act is completed by the medium of the connections 18, 16, 10, and 9 to the sliding bar 3, as will be understood from Fig. 2, the latter will be moved to the left of the stop 2^x, as will be understood from Fig. 14, the recessed portion 7 of the sliding bar being now under the seaming-head, while the die 4 has moved to the left of the stop 2^x, and at about this instant the seaming-head having raised slightly, as seen in Fig. 19, the tucker 32 (seen in Fig. 1) is caused to move toward the movable jaw 99 by reason of the cam 23 and the connections 25, 28, and 30, (seen in Fig. 2) it being remembered that said jaw 99 is normally pressed downwardly by the spring 100, and the lapped portion of the seam will now be caused by the operation of the tucker 32 to assume the positions seen in Fig. 19, the jaw 99 occupying substantially the position therein shown, so that any displacement of the lapped seam will be prevented and the sliding bar 3 remaining in the position shown, the die 4 being to the left or back of the stop 2^x. A further rotation of the shaft 22 will cause the jaws 90 and 99 to descend on each side of the lapped seam, as in Fig. 19¹/₂, after which the edge 95 of the hammer 94 descends upon the lapped seam, as seen in Fig. 20, and the seam will be hammered into place, thus forming the finished seam 106, (seen in Figs. 20 and 21,) and on the forward movement of the sliding bar 3 the contact of the edge of the die 4 with the finished can-body (seen in Fig. 1) will push the same from the horn or seaming-form, and the operation above described will be repeated.

It will of course be understood from the foregoing that the fixed jaw 90 of the seaming-head proper has an independent movement of its own through the medium of the cams 73, slide 79, and the stem 80, which is connected to the head 70^x, and that an independent movement is imparted to the hammer 92 and the portion 95 thereof through the medium of the plungers 69 and the connections for operating the same, as will be understood from Fig. 3, the movement of all the parts being automatic and being caused by the depression or elevation of the treadle.

When the foot of the operator is removed from the treadle, the spring 65 will cause the parts to assume the position seen in Fig. 1, the clutch-arm 57 moving into the position seen in Fig. 5, whereupon the contact of the cam 59 with the head 45 of the clutch-bolt will cause the nose 46 of the same to move out of engagement with the recesses 54, (seen in Fig. 7,) and it will be evident that the rotation of the part 40 and of the shaft 22 will cease, although the fly-wheel 55 continues to revolve.

The upward movement of the head proper is caused by means of the springs 77 and their adjuncts, as will be evident from Fig. 3, to which reference has been hereinbefore made. The tucker can also be adjusted as desired.

The rotation of the crank 38 and the engagement of the strap 39 therewith and the connection of the same to the head 68 causes the plungers 69 to press upon the bar 96 at the proper intervals near its extremities, as will be understood from Fig. 11, and especial attention is called to this feature of employing two plungers instead of one, located substantially as shown in Fig. 11, whereby the pressure throughout the entire length of the seam is rendered more uniform than heretofore, the springs 98 (shown in Fig. 11) serving to keep the hammer 92 always in its proper position, while the springs 89 and 100 also have a similar function with respect to the adjustable gage 84 and the movable jaw 99, as will be evident.

It will be understood that the relative periods in which the movements of the sliding bar 3, the tucker 32, the fixed jaw 90, the hammer 92, &c., take place may be varied without departing from the spirit of my invention and that other changes may be made by those skilled in the art which will come within the scope of the same, and I do not therefore desire to be limited in every instance to the exact constructions I have herein shown and described.

Especial attention is called to the function of the end 41^x of the clutch-lever, the same by its contact with the crank-shaft when the treadle is released acting as a brake, as is evident.

In the preferred operation of my invention the action in detail of the cams on the crank-shaft upon their adjuncts during the operations of forming the seam is substantially as follows: When the parts are in the position seen in Fig. 22, assume that the machine is inoperative. When the cams 73 have rotated in the direction of the arrow, so that the point A is substantially in contact with the roller 72, the jaws assume substantially the position seen in Fig. 18, and the first step in the formation of the seam takes place, as shown in said figure. A further revolution of the cam until the point B contacts with the roller allows the jaws to rise sufficiently to permit the sliding bar to be drawn back and permit the tucker to move so as to form the seam, as seen in Fig. 19. A further revolution of the cam until substantially the point C reaches the roller 72 causes both jaws to be forced down on each side of the seam formed, as shown in Fig. 19¹/₂, and holds it in place, so that its displacement or spreading is prevented. A further revolution of the cam 73 so that the portion D contacts with the roller forces the hammers 94 down, thus driving the seam into the recess 7, thereby completing the operation, the finished seam appearing as seen in Figs. 20 and 21, as is evident.

In Fig. 2^x the buffer 18^x may be adjusted relatively to the lever 18 by means of the screw 19^x. In like manner the buffer 15 may be adjusted relatively to the lever 10 by means of the screw 15^x, it being apparent that when said buffers 18^x and 15 are adjusted the same may be firmly retained in position by the jam-nuts 20^x.

The throw of the lever 10, and consequently the distance the sliding bar 3 is to travel in its reciprocating motion, may be regulated by the turnbuckle 16^x, fitted on the link 16, which latter may be provided with a right and left hand screw-thread, as at *a* and *b* in said Fig. 2^x.

The seaming-form 2 (seen in Figs. 2^x and 23 to 29, inclusive) is provided with a gage 107, which is connected to the sliding bar 3 by a link 108, so that the reciprocating motion imparted to the sliding bar 3 will be transmitted to said gage 107. The forward portion of the gage 107 is formed with a thickened portion 109, against which the edge 104 of a blank 103 abuts when said blank is placed upon the seaming-form 2, (see Fig. 23,) and said gage is held in its elevated position by spring-actuated pins 110, as seen in Figs. 23 and 24, when said gage is in the position seen in Fig. 24.

When the sliding bar 3 is drawn rearwardly by the lever 10, the gage 107 will also move in a similar direction, and the upper face of the thickened portion 109 of said gage will be continuous with the periphery of the seaming-form 2, owing to the fact that the gage 107 is depressed by the jaw 99 and blank 103 when said jaw is lowered, it being noted that the seaming-form 2 is provided with a recess 111, into which the gage 107 enters when the latter is depressed. When the gage 107 is in its forward position, as seen in Fig. 24, and the same is not depressed, as hereinbefore described, the rearward movement of said gage—that is to say, from left to right in said Fig. 24—will cause the same to lower without the assistance of the jaw 99 and blank 103, owing to the inclined face 112 on said gage, which contacts with the portion 113 of the framework 1 of the machine. The seaming-form 2 is also provided with an adjustable gage 114, which may be moved toward and from the center of said form and held in adjusted position by screws or other fastening devices 115, it being noted that one or more washers 116 may be placed between said gage 114 and the seaming-form 2, so as to fill up the space which occurs when said gage 114 is moved downwardly.

In producing a seam 117, as seen in Fig. 29, the first step is to place the blank 103 on the seaming-form 2, as seen in Fig. 23 and also in Fig. 26. The jaws 90 and 99 are then lowered and bend portions of the blank 103, as seen in Fig. 27. The hammer 94 then lowers, as seen in Fig. 28, and gradually compresses the seam 117. When the hammer 94 has completed its downward stroke, it is in the position seen in Fig. 29, in which figure

is also shown a finished seam, it being noted that the outside of said seam 117 is flush with the outside of the adjacent portions of the body of the can.

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

1. In a machine for seaming metallic vessels, the combination of a seaming-head, a seaming-form, an adjustable hammer, plungers, an interposed bar independent of the hammer and resting on the body of the same and upon which the plungers bear, a tucking device and mechanism for operating the same.

2. In a machine for seaming metallic cans, and the like, a seaming-head having an adjustable hammer mounted therein, an adjustable set-gage movable with the head, a fixed and movable jaw in said head, a recessed gage-die 4, a sliding bar in which said die is located and mechanism for operating the above parts in unison, substantially as described.

3. A clutch-arm having an inclined face thereon, an arm 60, means for moving said arm, a clutch-bolt 42 having the ribs or guides 43, the nose 46 and shoulder 47, the head 45 in combination with a grooved crank-shaft adapted to receive said clutch-bolt, and a pulley or fly-wheel mounted thereon, adjacent thereto, and having a recessed face, substantially as described.

4. In a machine of the character described, the seaming-head having therein two jaws, one of the latter being fixed, and the other movable in said head, a hammer intermediate of said jaws, a bar above said hammer in combination with plungers adapted to contact with said bar, a spring for holding said hammer normally in position, and means for actuating said head and plungers, substantially as described.

5. In a machine of the character described, the seaming-head having therein a slotted gage, a fixed jaw, a movable jaw, a hammer intermediate said jaws, springs for actuating one of said jaws and said hammer, a bar above said hammer, and plungers adapted to contact with said bar, substantially as described.

6. In a machine of the character described, a suitable supporting-frame, a horn or seaming-form mounted thereupon, a bar adapted to slide in said horn and having a die 4 attached thereto constructed substantially as shown, and a recessed or depressed portion 7, means for reciprocating said bar, a tucker adapted to work at an angle to the movement of said bar, a seaming-head located above said form and movable bar, a movable hammer and an adjustable gage mounted on said head, the above parts being combined substantially as described.

7. In a machine of the character described, a seaming-head having a fixed and movable jaw therein, an adjustable hammer supported adjacent said jaws, a gage also supported in said head, a seaming-form, a sliding bar mov-

able on said form, a portion of said bar being depressed, while another portion thereof is provided with a die having a laterally-extending lip, and a groove under said lip, a tucking device movable at an angle to the line of movement of said sliding bar, in combination with means for actuating the above parts in unison, substantially as described.

8. In a machine of the character described, a sliding bar having a die thereon provided with a lip and a groove, and a recess therein for a portion of its length, in combination with a suitable seaming-head, an adjustable seaming-hammer, an adjustable gage carried by said head, a tucking device, a fixed and a movable jaw carried by said head and means for actuating the above parts in unison, substantially as described.

9. In a machine of the character described, a sliding bar and a tucking device, in combination with a seaming-head having therein a fixed and movable jaw, a hammer mounted between said jaws, a bar supported above said hammer within said head, springs abutting against said head and hammer, plungers adapted to pass through said head and contact with said bar near its ends, means for actuating said plungers, tucking device and sliding bar, substantially as described.

10. In a machine of the character described, the lever 10 suitably fulcrumed, the sliding bar 8, the link 9, common to said bar and lever, the buffer 15, the spring 12, the lever 18 fulcrumed to a suitable point, the link 16 common to said levers 10 and 18, the cam 21 having a working face adapted to actuate said lever 18, the tucking device 32, the lever 25 pivoted thereto and actuated by said cam, a seaming-head provided with jaws, a hammer and a gage, in combination with means for actuating said head, substantially as described.

11. In a machine of the character described,

a crank-shaft having cams or eccentrics thereon, a slide actuated thereby, a strap encircling a portion of said shaft, the head 68 to which said strap is pivoted, the seaming-head 70^x, and the plunger mounted on said head 68, and having their ends adapted to enter the seaming-head, the latter being supported in said slide, substantially as described.

12. The combination of a crank-shaft having a portion 40, a recess 41, in which a movable clutch-bolt is adapted to be located, a pulley or fly-wheel having a recessed face, and a clutch-lever for moving said clutch-bolt into and out of engagement with said recessed face, an end of said clutch-lever being adapted to contact with said crank-shaft at suitable intervals, and thus serve as a brake, substantially as described.

13. In a machine of the character described, a seaming-form, a spring-actuated gage independent of the die adapted to reciprocate on said form, a recess in the latter to receive said gage and means operatively connected with the die for imparting a reciprocating motion to said gage.

14. In a machine of the character described, a seaming-form provided with a die and an adjustable gage movable in a plane substantially parallel with the die, and means for retaining said gage in adjusted position on said form.

15. In a machine of the character described, a lever 18, a buffer 18^x therefor, means for adjusting said buffer, a sliding bar 3, a lever 10, a link common to said bar and lever, a link common to said levers 18 and 10, and means for adjusting the length of said link, in combination with a seaming-form, and means for forming a seam thereupon.

WILLIAM J. GORDON.

Witnesses:

FORREST E. GORDON,
GEO. LETTERMAN.