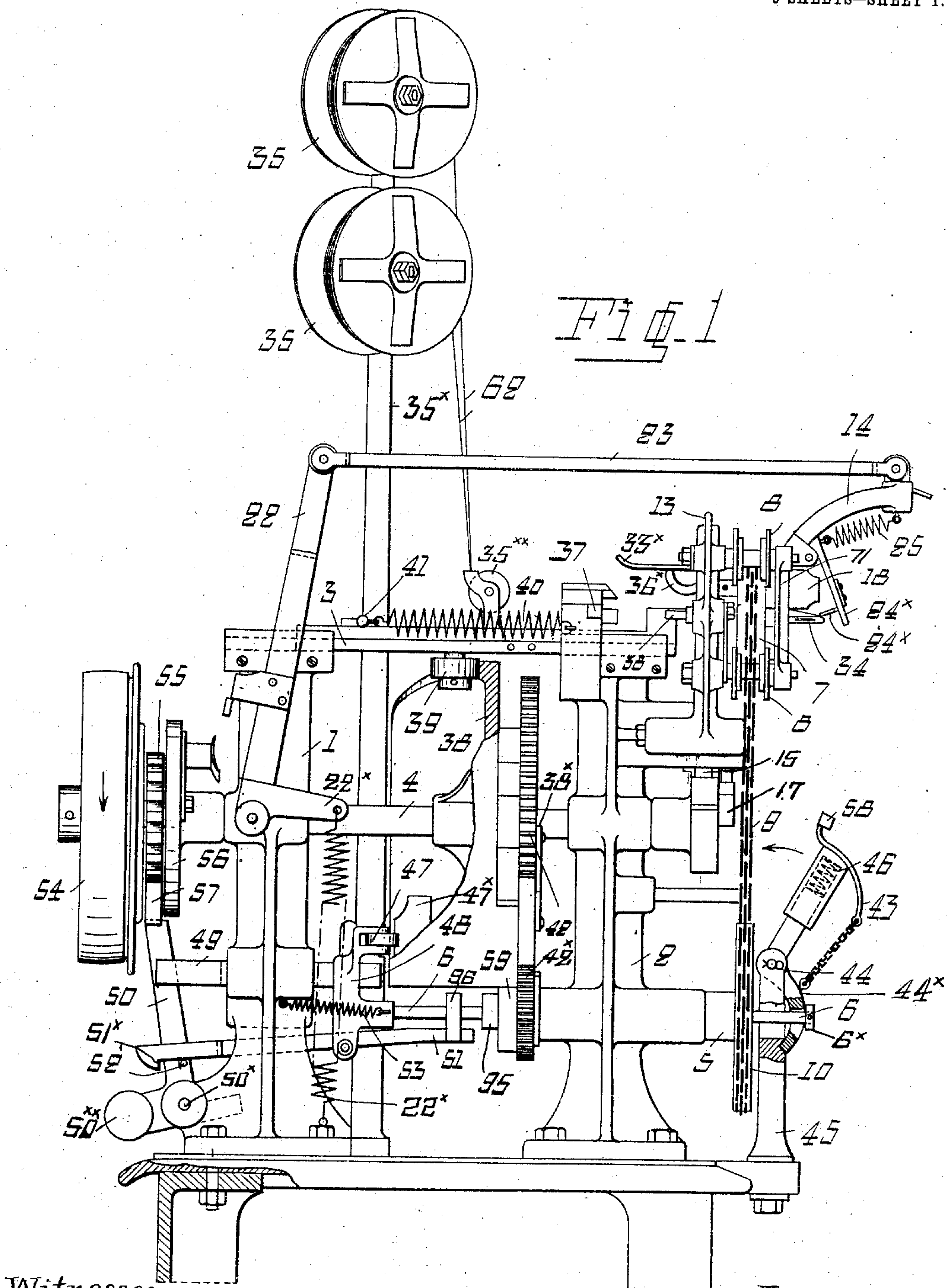


C. A. V. HÄLLGREN.
MACHINE FOR WIRING BOTTLES AND THE LIKE.
APPLICATION FILED JAN. 9, 1908.

905,696.

Patented Dec. 1, 1908.
9 SHEETS—SHEET 1.



Witnesses:

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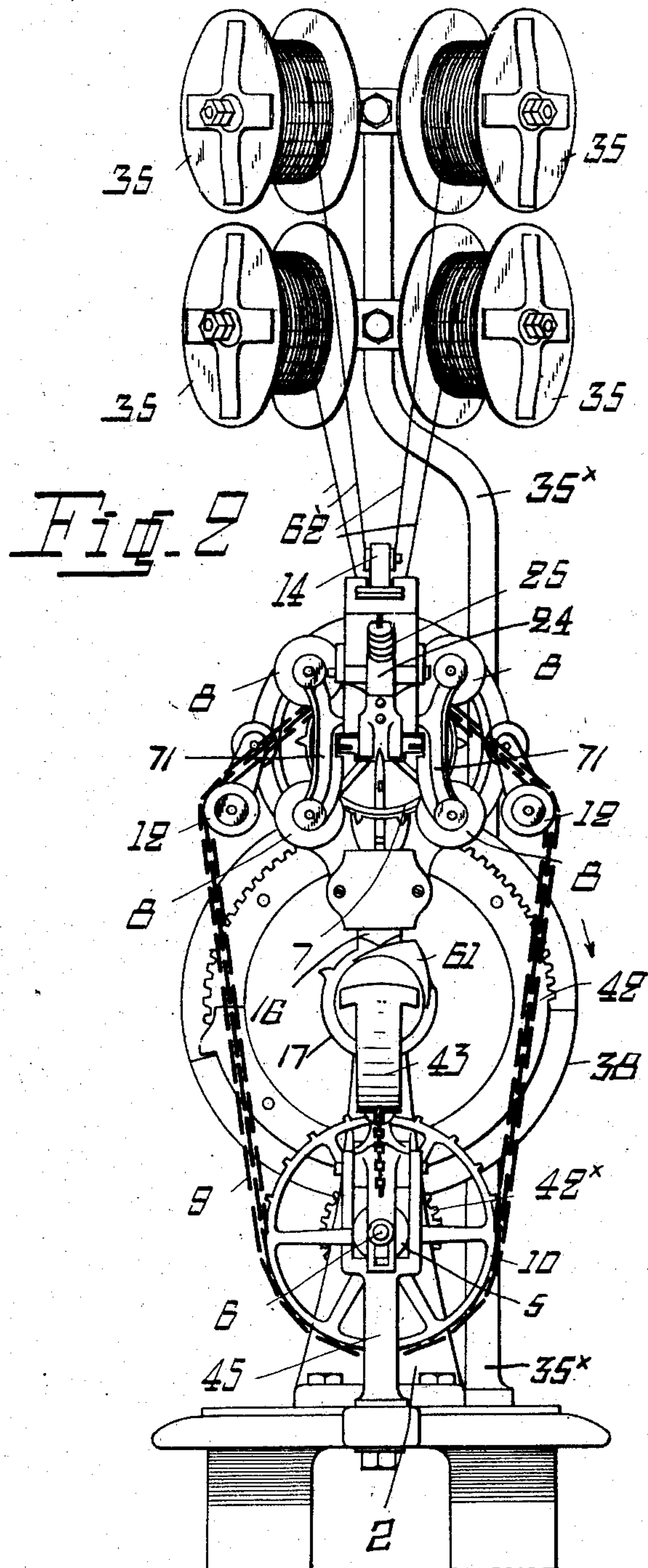
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Witnesses;

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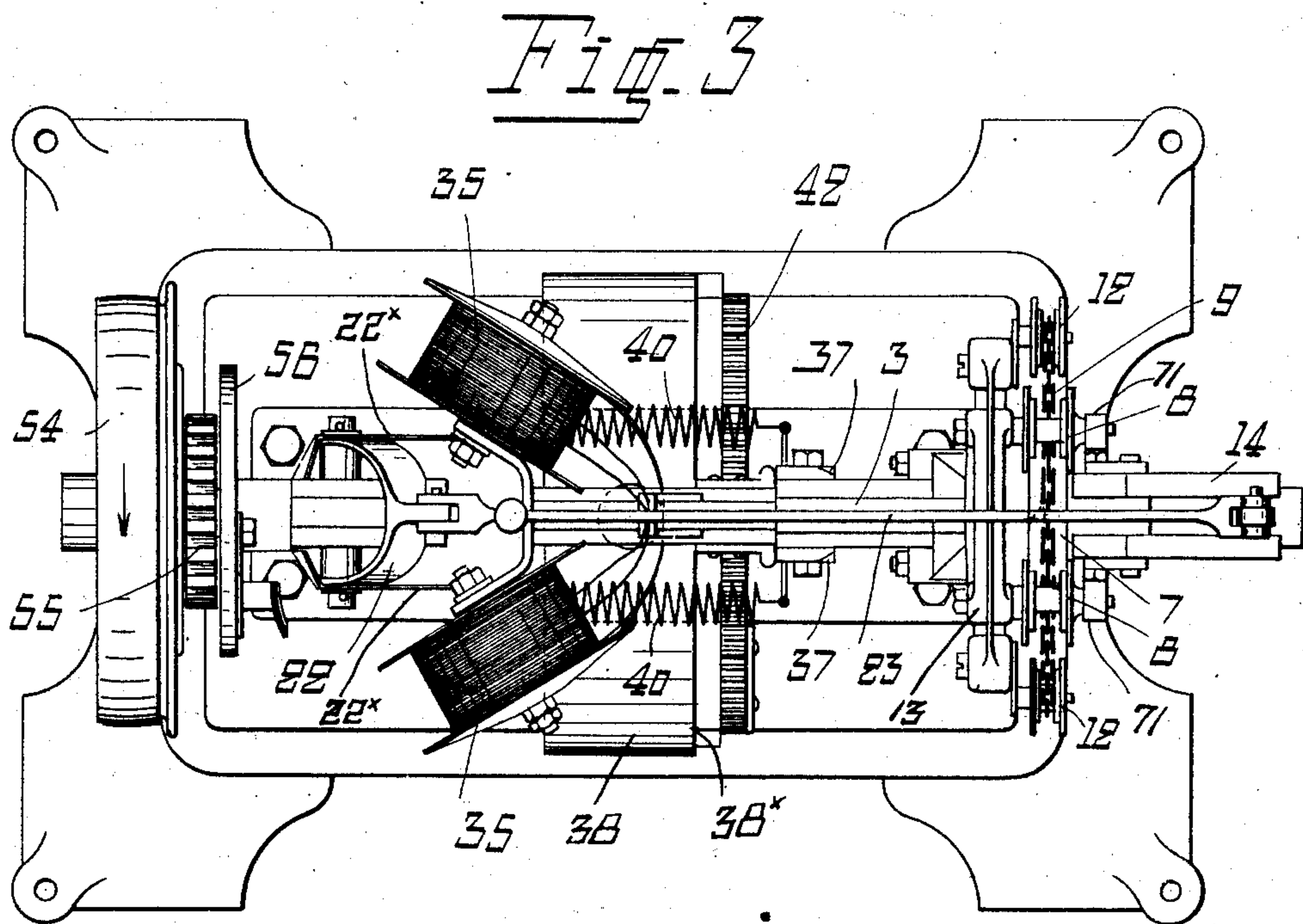
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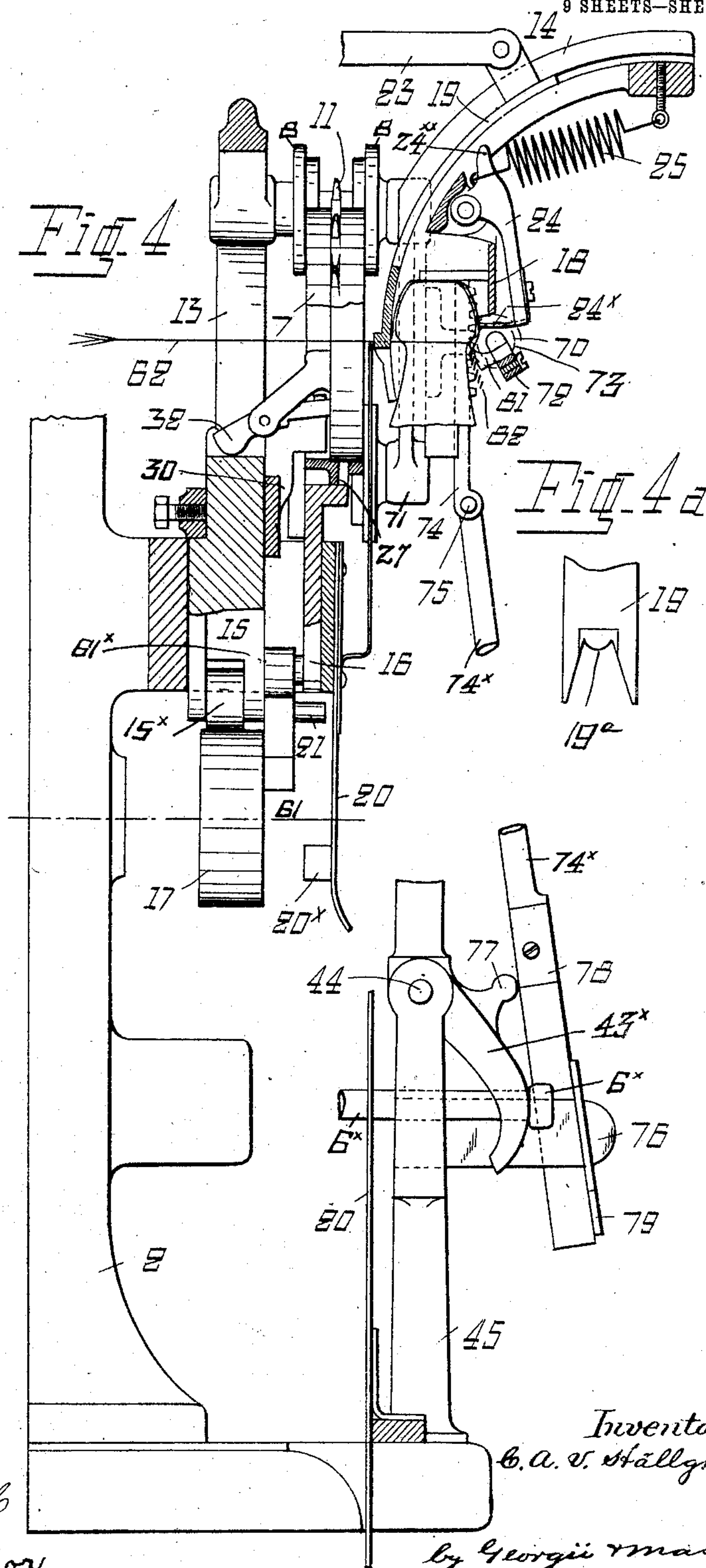
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9 SHEETS—SHEET 4.



Witnesses:

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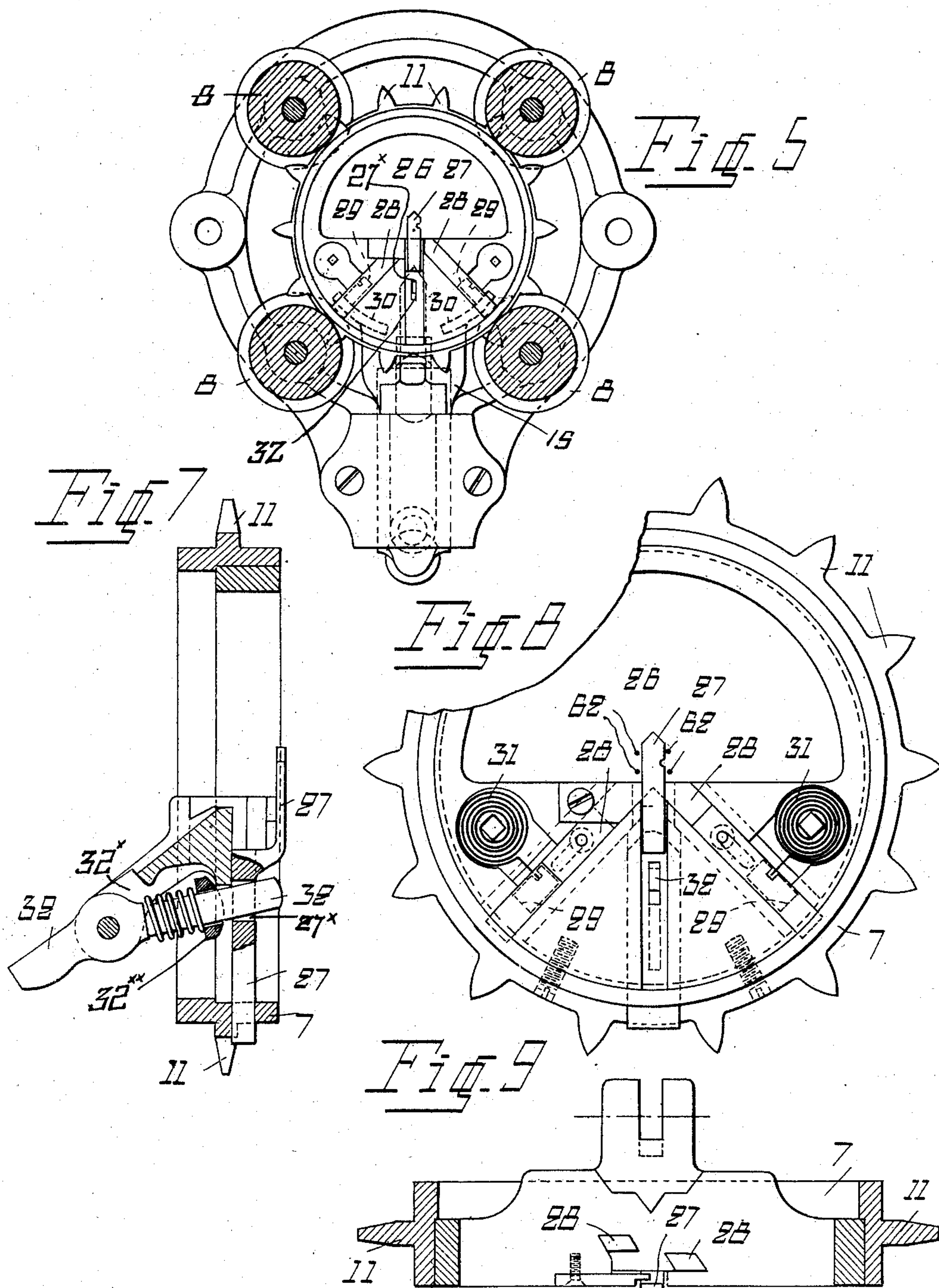
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9 SHEETS—SHEET 5.



Witnesses:

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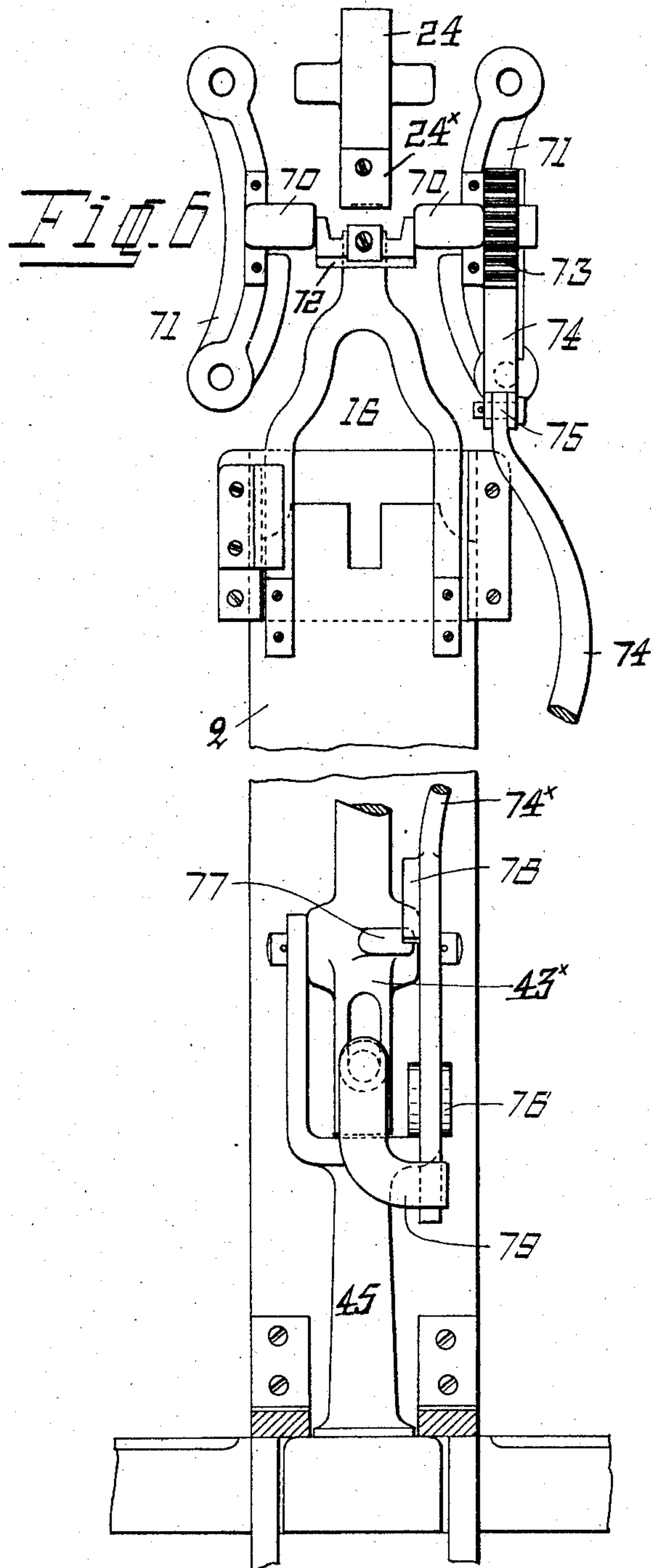
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Patented Dec. 1, 1908.
9 SHEETS—SHEET 6.



Witnesses:

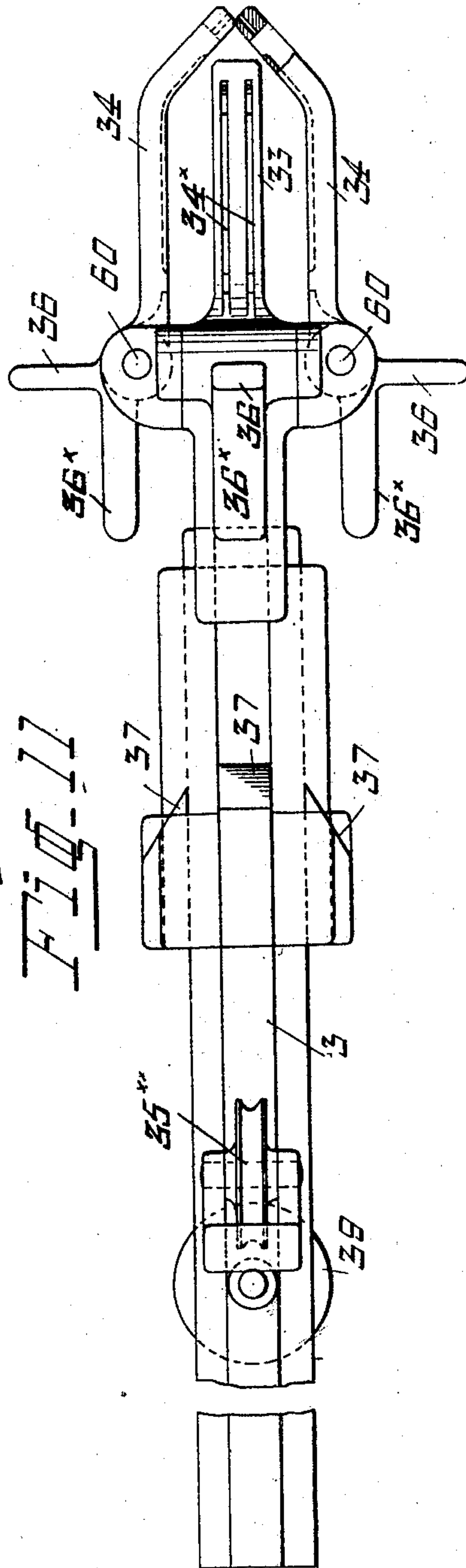
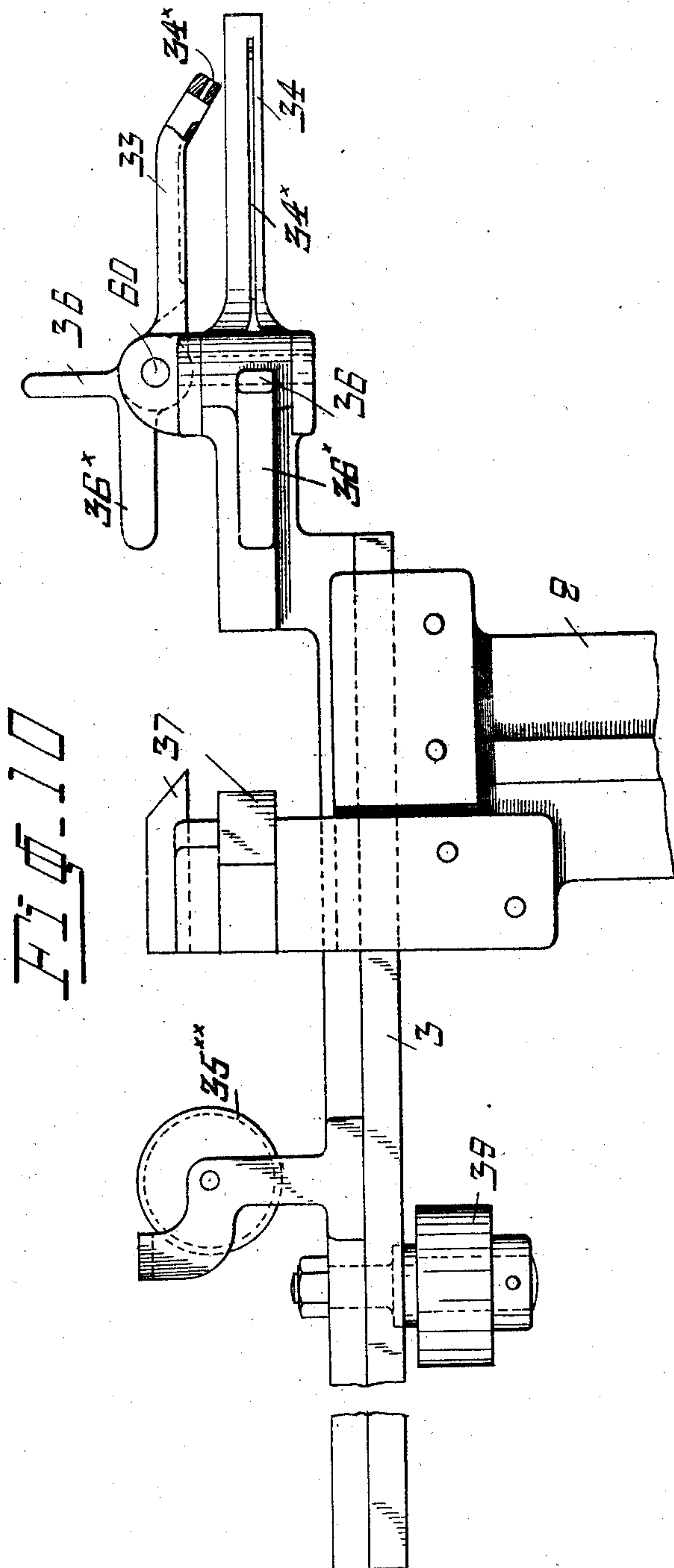
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Patented Dec. 1, 1908
9 SHEETS—SHEET 7.



Witnesses:

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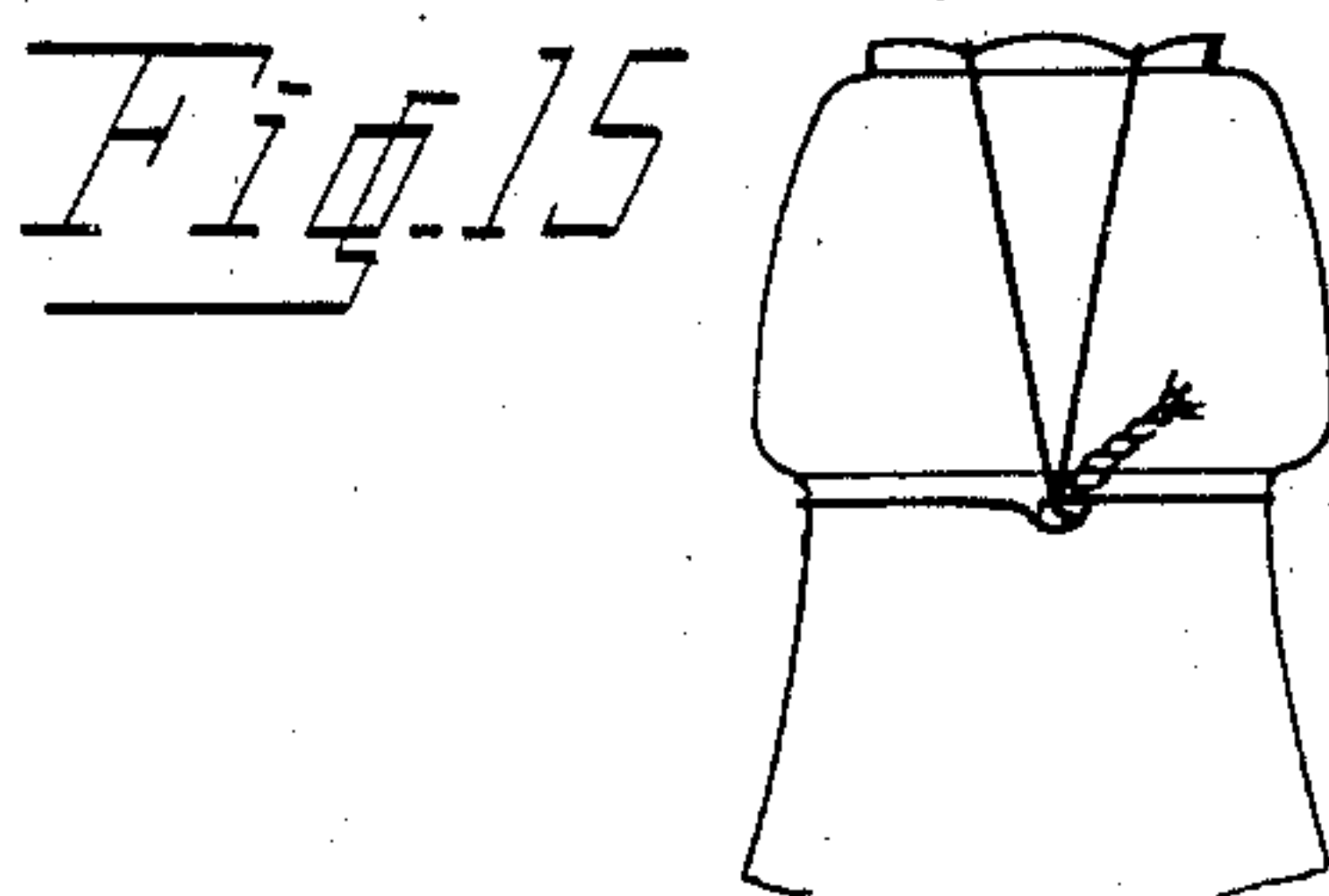
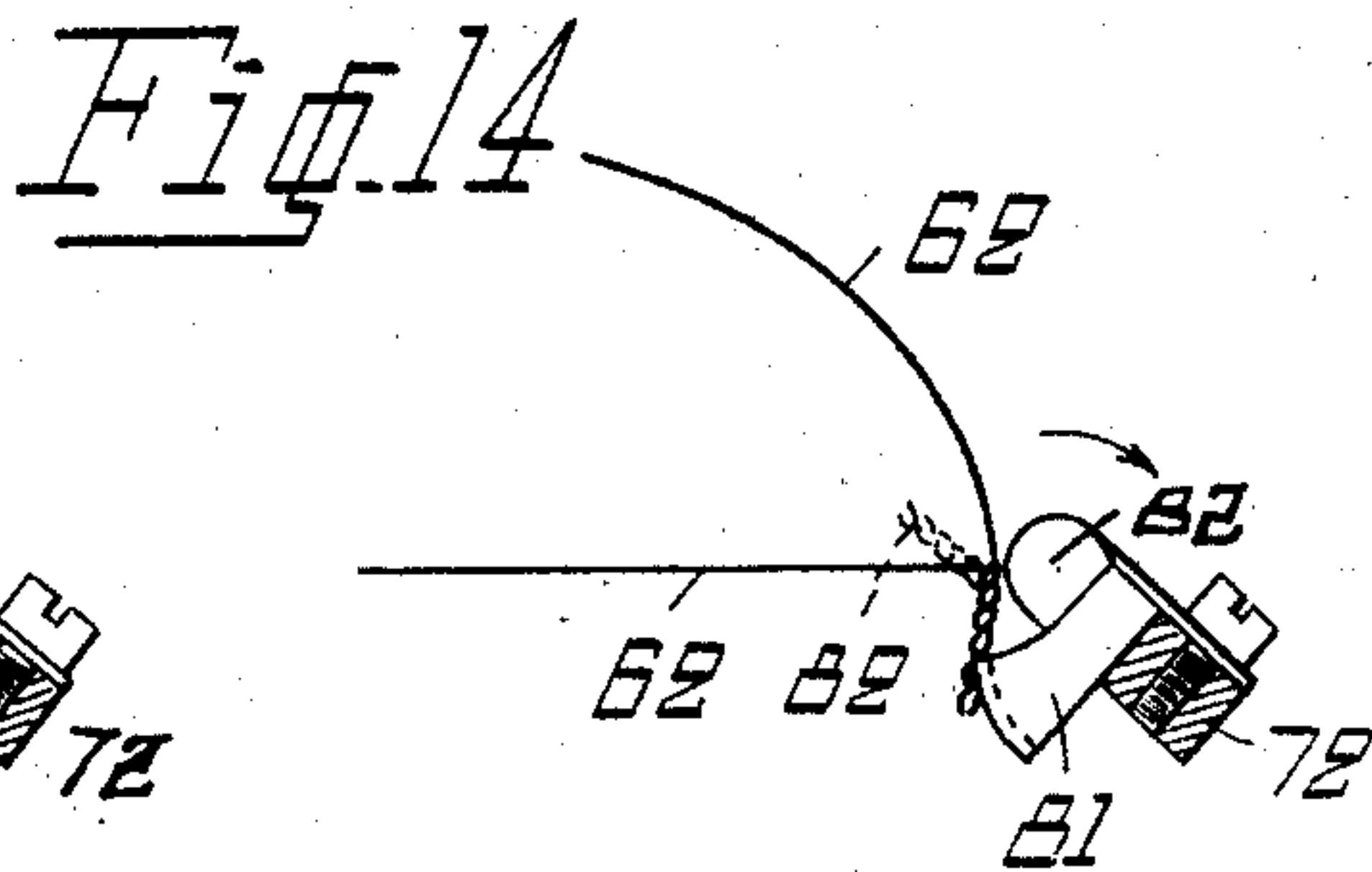
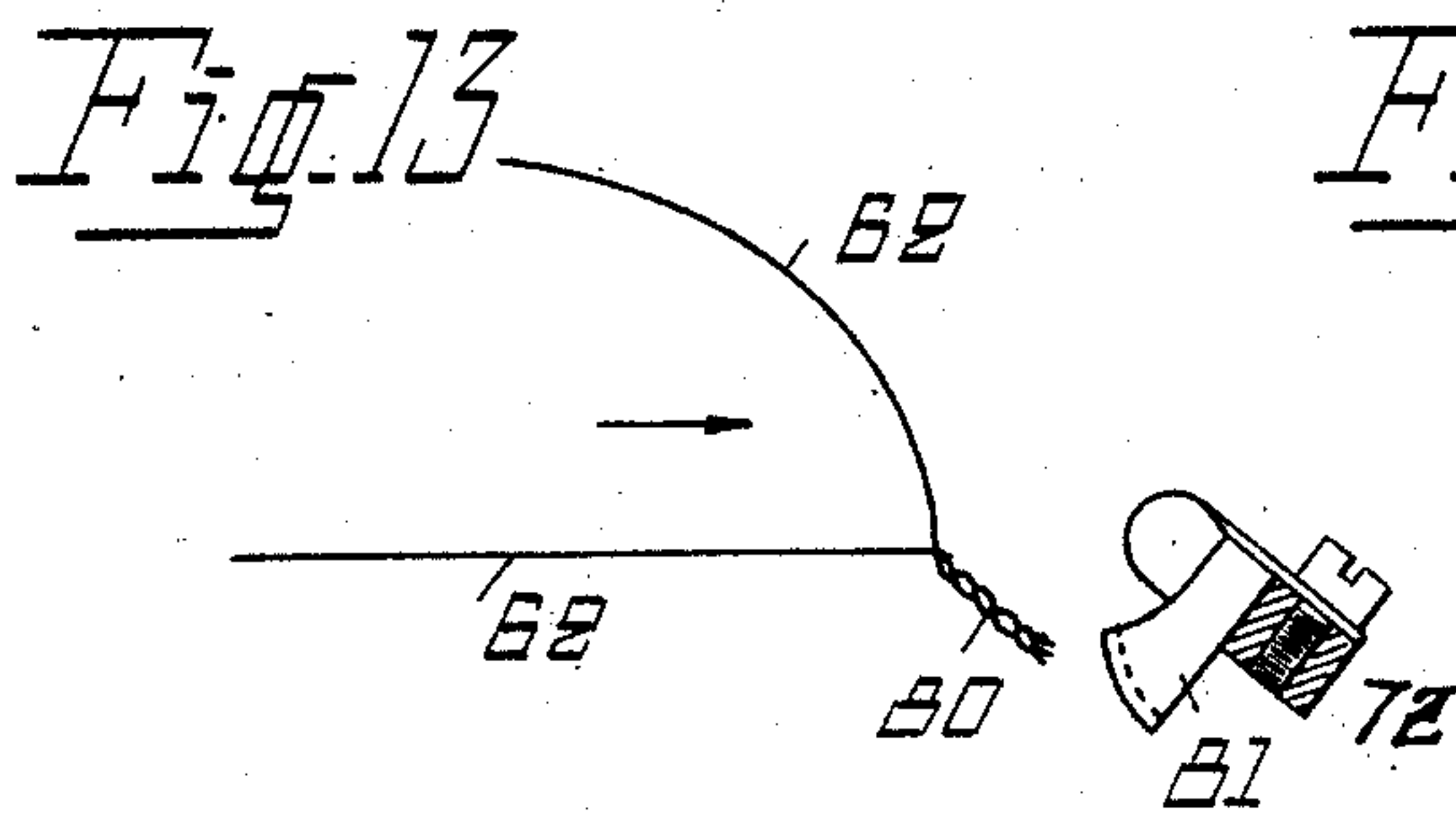
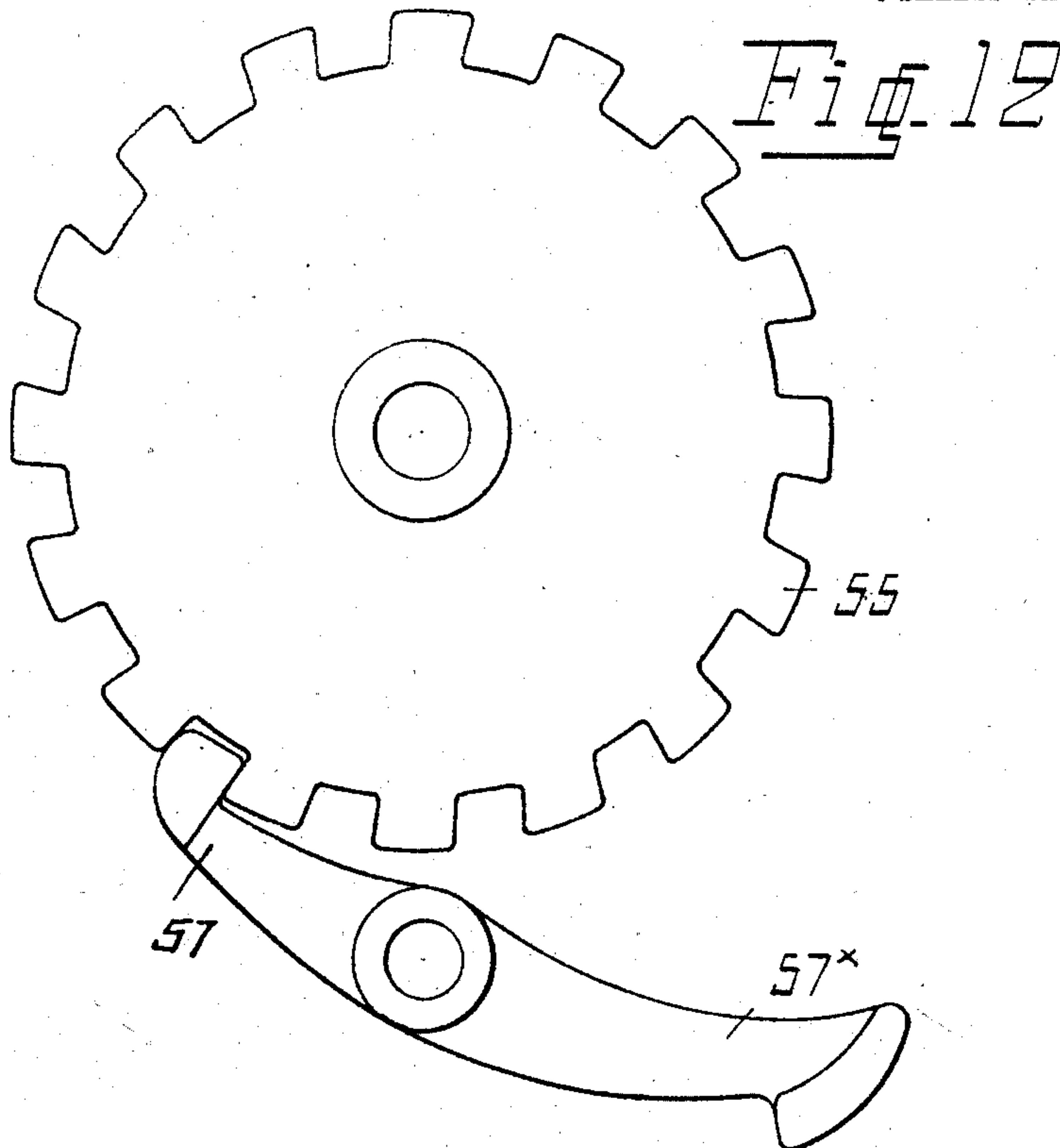
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905,696.

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9 SHEETS—SHEET 8.



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9 SHEETS—SHEET 9.

905,696.

Fig. 15.

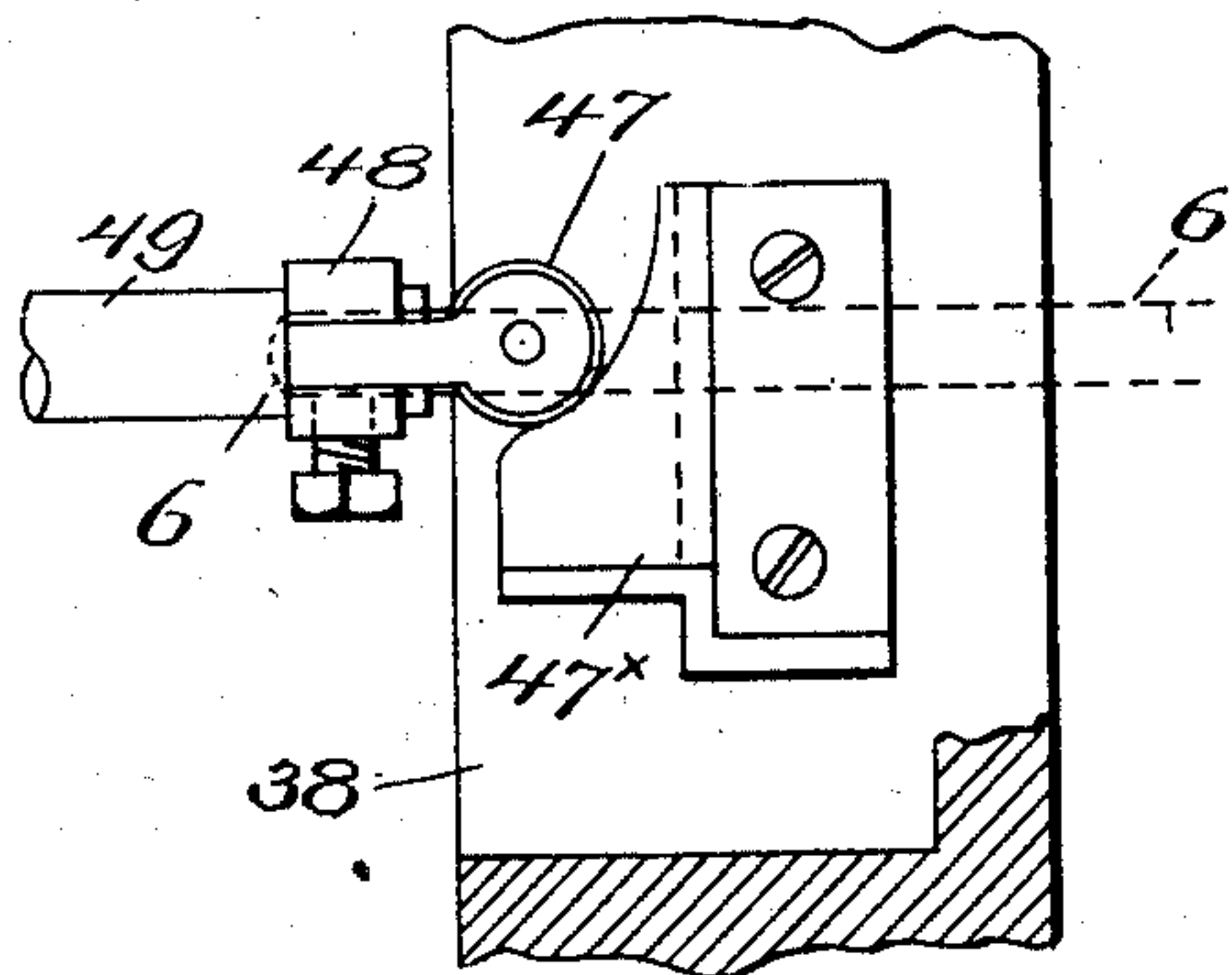


Fig. 17.

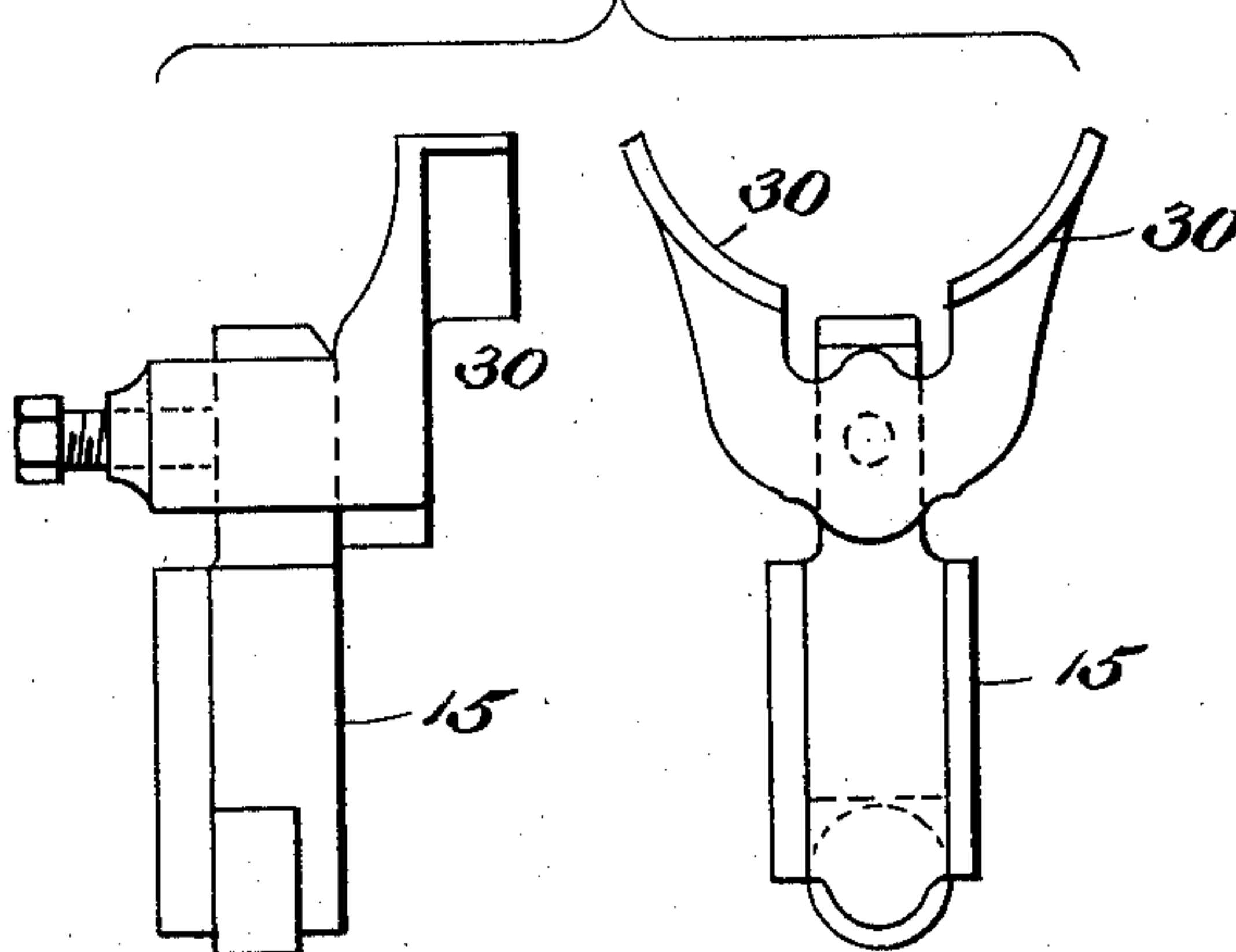


Fig. 18.

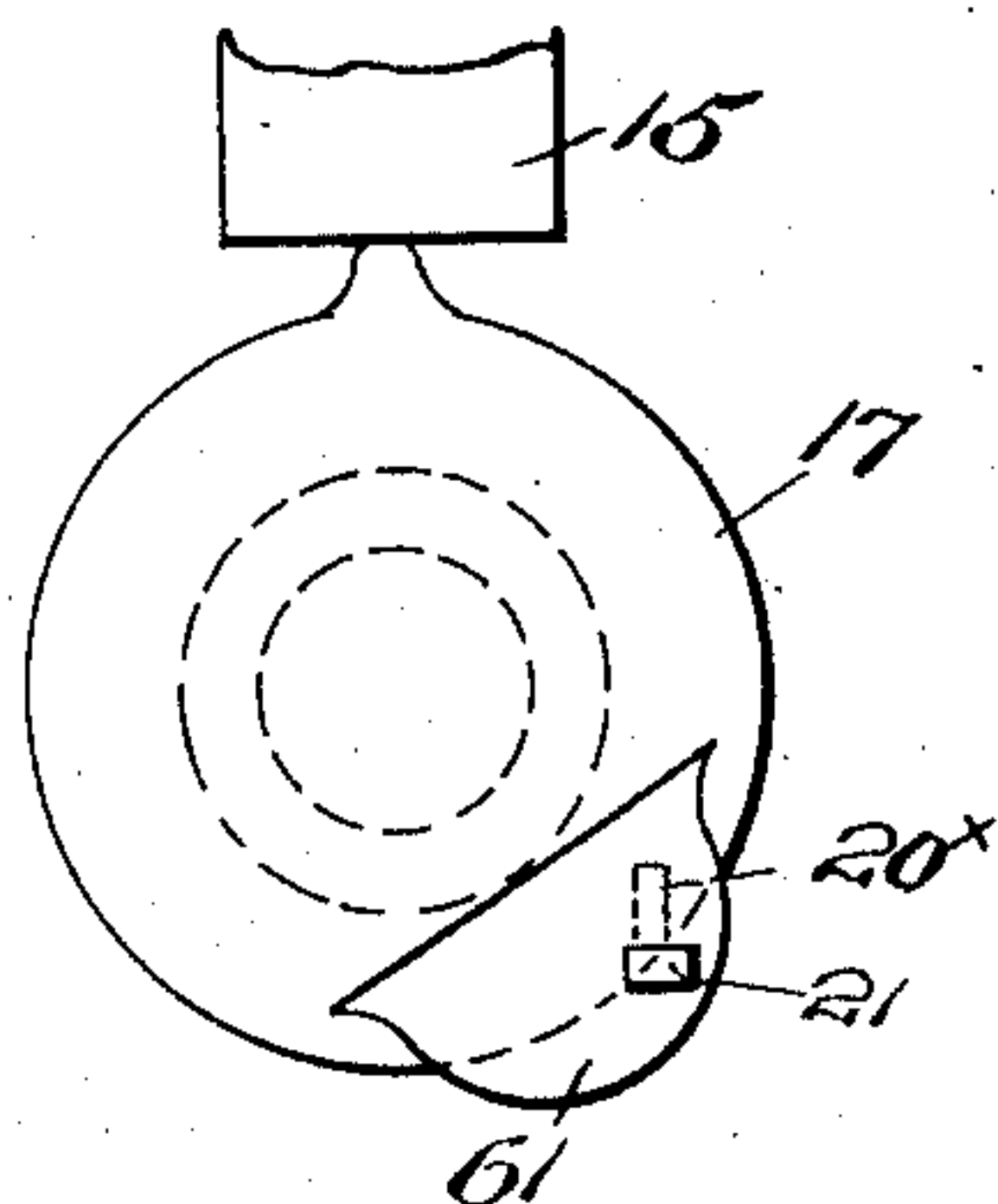


Fig. 19.

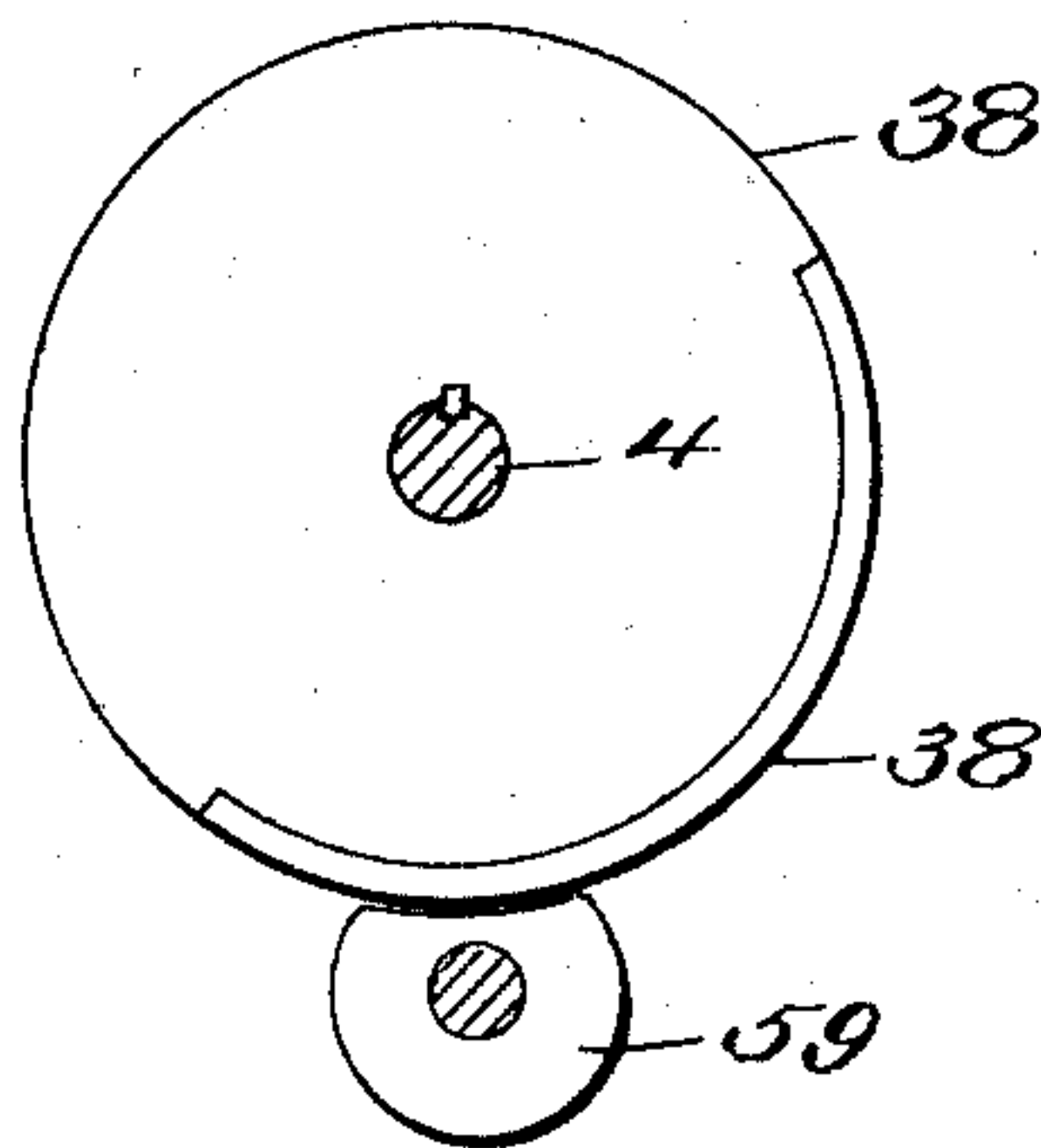


Fig. 20.

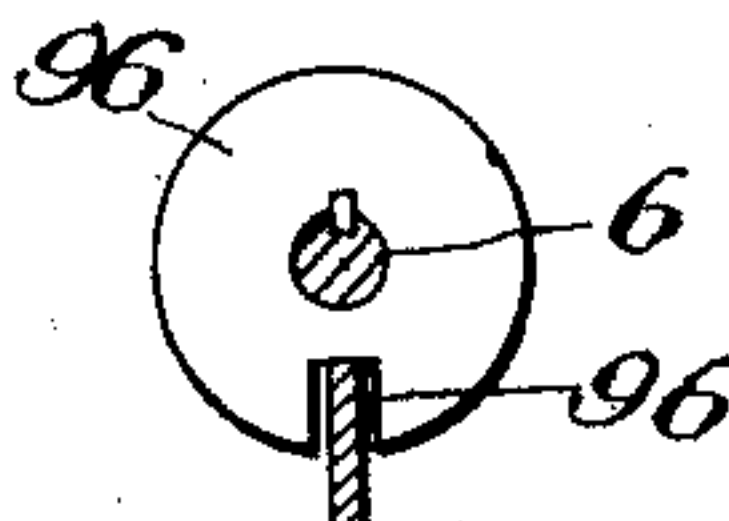
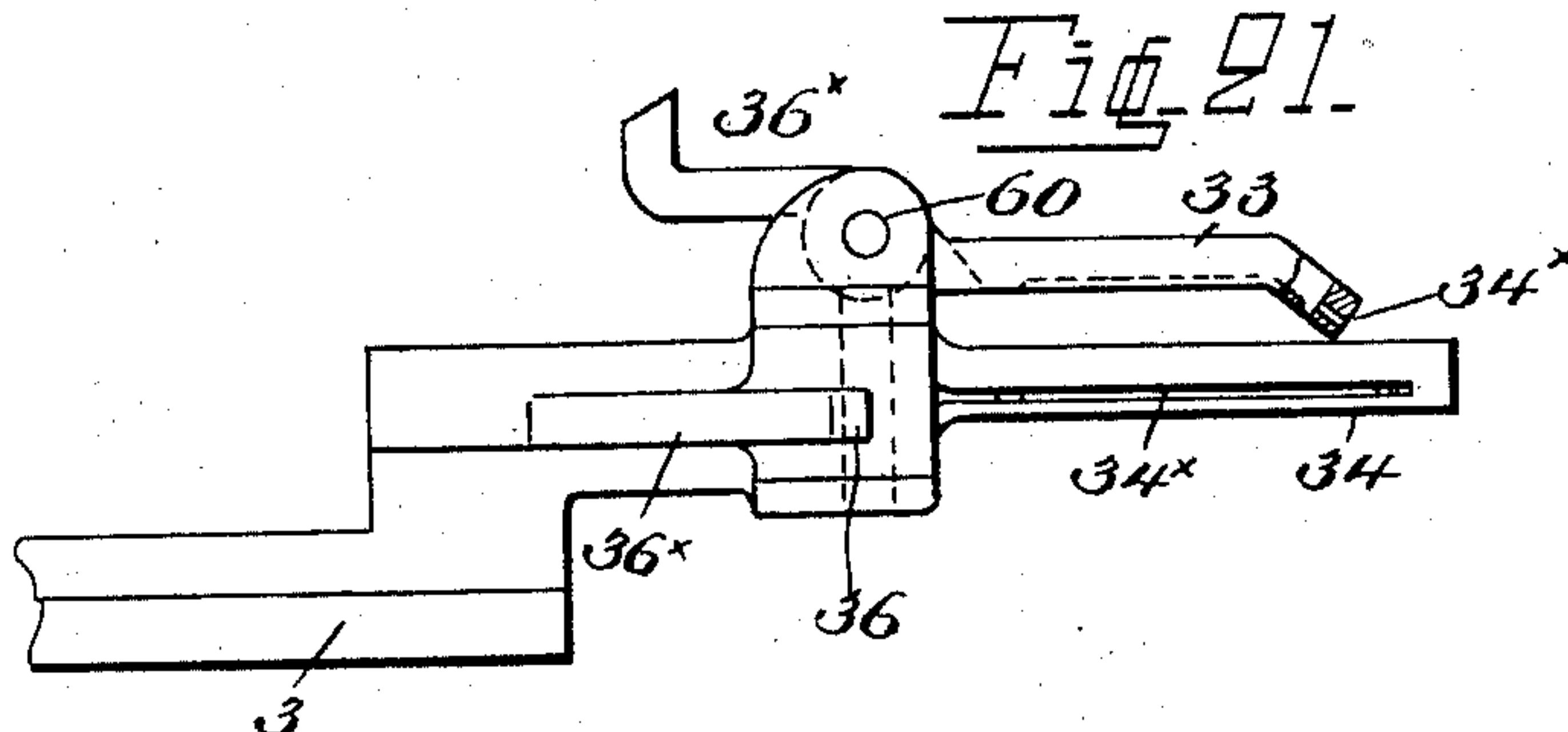


Fig. 21.



Witnesses

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MACHINE FOR WIRING BOTTLES AND THE LIKE.

No. 905,696.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed January 9, 1908. Serial No. 410,041.

To all whom it may concern:

Be it known that I, CARL ANDREAS VIKTOR HÄLLGREN, a subject of the King of Sweden, and resident of Grefmagnigatan 13, Stockholm, in the Kingdom of Sweden, have invented certain new and useful Improvements in Machines for Wiring Bottles and the Like, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for placing wires over the corks or stoppers in bottles and tying the same. In this art as hitherto practiced in one form of wiring device, several wires are used in the tying operation, one wire being placed at each side of the bottle neck under the head, the ends of the wires being twisted together to form knots, one at each side of the bottle. In the case of four wires two of these wires are placed over the cork or stopper, the remaining two wires being placed partly around the neck and one at each side.

In order that the tying operation may be accurately carried out and the wires be properly placed, it is of great importance that the bottle be firmly held during the operation and that the parts for guiding the wires, twisting the same together, and cutting the twisted wires, be not displaced but be held and guided accurately. Under the constructions for the purpose hitherto employed, instability or play of the parts is likely to occur if the machine is not very solidly built or has been in operation for some time, and even a slight play or instability of this character will result in imperfect tying.

It is the purpose of the present invention to overcome these and other objections and to accomplish this a machine embodying my invention involves the use of a ring or disk adapted to be rotated and suitably guided and provided with openings through which suitable wire guiding devices can pass freely at the proper time, said ring, moreover, carrying a pin or stop which, at the predetermined moment, occupies a position at a central point of the ring in such a position relative to the wires that on the rotation of the ring or disk the wires are twisted together, said ring or disk being also provided with

cutters adapted to be thrust forward to the central point at the proper moment to sever the twisted wires.

The invention also involves the use of devices for bending the twisted ends or knots of the wires and means whereby the insertion of the bottle serves to start the operative mechanism, and means for automatically stopping said mechanism when the wiring operation of a bottle is finished and also for holding the parts against any untimely movement.

Other features of the invention will be set forth below and pointed out in the claims.

In the accompanying drawing: Figure 1 is a side elevation of a machine embodying the invention; Fig. 2 is a front elevation of the machine; Fig. 3 is a plan view of the same; Fig. 4 is an enlarged view, partly in elevation and partly in longitudinal section, of a portion of the front end of the machine; Fig. 4^a is a detail of the wire-gathering slide; Figs. 5, 7, 8 and 9 are detail views of the twisting ring and the parts immediately connected therewith; Fig. 6 is a detail front elevation of a part of the mechanism for bending the end of the wire before the bottle is wired; Figs. 10 and 11 are a side elevation and a plan view of the wire guides and the slide carrying the same; Fig. 12 is a detail view of part of the mechanism for stopping the machine; Figs. 13 and 14 are detail views showing the initial end-bending devices; Fig. 15 is a view of the wired bottle; Fig. 16 is a detail view of a cam projection forming a part of the clutch-operating mechanism; Fig. 17 is a detail view of the slide which operates the wire-cutters; Fig. 18 is a detail elevation of the devices for raising the slides which actuate the wire-cutters and the twisting pin, and the slide for bending the end of the wire against the bottle; Figs. 19 and 20 are detail views of parts of the operating mechanism; and Fig. 21 shows a slight modification of one of the wire guides.

In the machine represented in the drawings, in illustration of my invention, the act of inserting the bottle or similar vessel into the operative position first causes certain preliminary mechanism to act and thereupon it serves to start the automatic mechanism by actuating the clutch mechanism for coup-

ling the driving shaft with a pulley mounted loosely thereon and deriving its movement from any desired or suitable source of power. The mechanism is stopped and held against movement automatically at a predetermined moment when the driving shaft has turned the desired amount.

This machine carries out the following operations in the order named. It bends the twisted ends or knot remaining at the extremity of the wires after the preceding wiring operation inward, upward, and somewhat to the side; thereupon, the bottle head having been inserted between the lower and below the upper wires, and the automatic mechanism having been started by this insertion of the bottle, it draws the wires over the cork or stopper and around the neck of the bottle; thereupon, the wires on the inside of the bottle and opposite to the twisted ends are twisted and thereby tightened over the cork and around the bottle neck; thereupon, the wires thus twisted are cut off in the middle of the twisted part, and finally the severed twisted end thus left on the bottle-neck is bent upward. Thereupon the automatic mechanism of the machine is automatically unclutched and rendered inoperative. The wired bottle being then withdrawn, the parts are by this manipulation set in such a position that the next insertion of a bottle for wiring will serve to start the automatic mechanism for a new cycle of operations.

I will describe the various mechanisms performing these operations in the order in which they have been recited, as far as practicable.

Referring particularly to Figs. 1, 2, 3 and 4, it will be seen that the frame of the machine comprises two main standards 1 and 2, in which the horizontal shafts and other parts of the mechanism are supported. The power shaft is represented at 4 and on it is mounted loosely a driving pulley, 54, which is driven from any suitable or desired source of power. This pulley is adapted to be coupled with the power shaft 4 and thus drive the same whenever a bottle is inserted in the machine by means of a clutch device comprising the parts 50, 55, 56 and 57, to be described below. The wires 62 for securing the stopper or cork, in the present case four in number, one for each side of the bottle-neck and two to pass over the cork, are wound on four reels, 35, Figs. 1, 2 and 3, suitably supported from the frame of the machine by a standard 35^x. Wire guides 33, for the two wires 62 passing over the bottle stopper and guides 34, 34, for the two side wires, are mounted on a slide 3, adapted to be reciprocated transversely on the standards 1 and 2, as best shown in Figs. 1, 10 and 11 and in Fig. 21. The wires pass from the reels 35 into these guides 33 and 34, being properly guided for this purpose by the

guide roll 35^{xx} journaled in bearings mounted on the slide 3 as shown in Figs. 1, 10 and 11.

Mechanism for bending the twisted ends of the wires upward and inward.—This mechanism and its mode of operation will best be understood from a reference to Figs. 1, 4, 6, 13, 14 and 15 of the drawing.

When the machine is at rest after a cycle of operations has been completed the parts occupy the relative positions represented in Fig. 1 of the drawing, from which it will be seen that wire guides 33, 34, 34, occupy their extreme position to the right of the figure, having passed for this purpose through the center of the ring 7 and to the required extent beyond the same. On the standard, 2, is mounted a standard or bracket, 13, which forms the support for an arm, 14, and on this arm, 14, a small lever, 24, is pivoted, as shown in Figs. 1 and 4, a spiral spring 25 secured at one end to the arm, 14, and at the other to the short arm 24^{xx} of said lever tending to force the lower forked arm 24^x toward the knotted end of the wires or the beaks of the wire guides, 33, 34, 34, when they are in their extreme position as indicated in Fig. 1. The upright or standard 13 is equipped with two stationary bearing pieces 71, 71, as shown in Figs. 1, 4 and 6, which are provided with ears, 70, 70, in which ears is journaled a crank-like part, 72, provided with a wire bending boss, 81, whose shape and arrangement is best shown in Figs. 4, 6, 13 and 14.

In order to impart a periodic rocking movement to this turning boss one of the journals of the said crank-like part 72 is provided with a pinion, 73, Figs. 4 and 6, said pinion meshing with a rack, 74, the said rack being suitably guided for vertical reciprocation and jointed at 75, to the pitman rod, 74^x. From Figs. 4 and 6 it will be seen that the lower end of the pitman rod, 74^x, is guided in a fork 76, extending outward from an upright, 45, forming part of the frame of the machine and said pitman rod is provided at its lower extremity with a bent arm 79, extending into the path of the headed end 6^x of a slide rod 6, adapted to be drawn to the right by the insertion of a bottle as will now be described and passing through a shaft 5, deriving its intermittent motion by means also to be described. On the upright 45, is pivoted, at 44, a bell-crank lever 43^x, whose upper arm is provided at its end with a yielding foot-piece, 43, upon which the bottom of the bottle to be wired is to be placed. The foot piece is made yielding in the direction of the upper arm by making said arm in two parts, one telescoping within the other, a spring, 46, being inserted between the two to yieldingly hold the foot piece, 43, outward. The said foot-piece 43, is provided with a shoulder or abutment, 58, to enable

the bottle to be accurately placed into the proper position on said foot piece. The lower arm of the bell-crank lever 43^x is slotted, as shown in Figs. 1 and 6, and engages the slide rod 6 as shown just to the left of the head 6^x, and the same is also provided with a lifting projection 77, which is adapted to engage a shoulder 78, on the pitman rod 74^x, thereby raising the same.

The operation of the parts thus far described will be apparent from the above. The machine being at rest and the twisted end 80 of the wires having, by a forward movement of the wire guides 33, 34, 34, been fed from the position indicated in Fig. 13 to that of Fig. 14, and the said twisted end having thereby been forced against the cam-like and grooved wire-bending boss 81, and consequently bent into the position indicated in full lines in said Fig. 14, a bottle is now placed on the foot-rest, 43, and the same with the bottle rocked in the direction indicated by the arrow, Fig. 1. Thereby the lifting projection, 77, which is at this time under the shoulder, 78, by engaging the same raises the pitman rod 74^x, and thereby the rack, 74, causing the pinion 73 and with it the bending boss 81, to rotate in the direction of the arrow of Fig. 14, and around 81^x as a center, thereby bending the said twisted end of the wires into the position indicated in dotted lines, 82, in Fig. 14. The turning boss 81 is grooved and so shaped or beveled that coincidentally with turning the wires upward and inward they are also bent somewhat to the side, as shown in Fig. 15, so that when the bottle neck is in place the said outer twisted ends of the wires are firmly clamped between the bottle neck and the outer wires, when the latter have been tightened, and thereby secured against becoming untied and they are also out of the way so as to give a finished, smooth and workman-like appearance to the knot. It is of considerable importance that this knotted end of the wires be thus secured. As the foot rest 43 is thus rocked inward, the lower arm 43^x by bearing against the head 6^x of the slide rod 6 causes the same to push the lower end of the pitman rod 74^x outward until, when the said pitman rod has reached its highest position, the lifting projection 77 slips from under the shoulder 78 of the pitman rod, thereby tripping the same and allowing it to drop into its lowermost position by means of its weight, thereby causing the pinion and the wire-bending boss 81 to return to its starting position, indicated in Figs. 13 and 14. This bending operation of the knotted ends of the wires by the boss, 81, is accomplished while the wire guides, 33, 34, 34, are receding toward their starting position at the left of the machine, Fig. 1 and it is, therefore, necessary to hold the twisted end of the wires stationary and

hence to have the wires slip through the said wire guides as they recede and as the bending-boss performs its rocking movement. This function is carried out by the lever, 24, which by the spring, 25, is urged to the right as the guides 33, 34, 34, recede and whose lower forked end, 24^x then embraces the said portion of the wires, and extending inside the end knot acts as a support against which the bending boss, 81, acts. The means for forcing the slide, 3, and with it the guides 33, 34, 34, to the left will be described below.

Means for starting the automatic mechanism.—These means are best shown in Figs. 1, 3, 4 and 12. The driving pulley, 54, as hereinbefore stated, runs idly on the power shaft, 4, until it is locked to the same by the clutch mechanism, which consists of a toothed disk 55 forming part of said driving pulley, and a clutch dog, 57, pivoted on a disk, 56, keyed to or otherwise secured to the power shaft. The clutch dog, 57, is weighted at its outer free end 57^x, so that the dog will always have a tendency to engage one of the notches of the toothed disk, (see Fig. 12) unless arrested and held out of engagement by suitable means, these means in the present case consisting of a tripping arm 50, Fig. 1, pivoted to the base of the machine at 50^x, so as to rock transversely to the plane of the dog 57, and adapted to have its end normally in the path of the weighted end 57^x of said dog by reason of the weight 50^{xx} on an arm extending laterally from said tripping arm.

In order to withdraw the tripping arm 50 out of the path of the dog 57 and thereby enable the said dog to drop into engagement with the toothed disk, 55, and thus to start the machine the following means are provided. To the slide rod, 6, hereinbefore described, which slide rod passes longitudinally through the shaft, 5, made hollow for this purpose, is attached a cross-piece, 48, which is mounted to slide on a bar, 49, fixed to and projecting beyond the standard 1 and having its outer end bifurcated to receive and guide the tripping arm 50. The upper end of the cross piece 48 is equipped with a roller, 47, which extends into the path of a cam projection, 47^x, on a cam, 38, secured upon the power shaft whereby the cross-piece and the rod 6 will be moved to the left of Fig. 1, this movement being accelerated by a spring, 53, attached to the frame and the cross piece, as shown in Fig. 1. The lower portion of the cross-piece 48 forms a support for a lever, 51, the outer or rear end of which is formed into a hook, 51^x, arranged to engage a pin, 52, on the tripping arm 50 when the slide rod is moved to the right in Fig. 1.

In order to prevent lateral movement of the lever 51, the inner end of the same is projected through a notch, 96^x, in the edge of a disk or collar, 96, on the slide rod and when

the lever is at the inner limit of its sliding movement, its end will be under and bear against a cam, 95, on the hollow shaft which, as the shaft rotates, will depress the inner end of the lever and, consequently, raise the outer end of the same and thereby disengage the hook 51^x from the pin 52, whereupon the tripping arm 50 will return to its position in the path of the dog 57.

The hollow shaft receives its motion through a pinion, 48^x, on the shaft, which is intermittently engaged by a mutilated gear wheel, 48, on the power shaft. Rotation of the shaft 5 is prevented when the pinion and gear are out of mesh by the brake disk, 59, secured on the shaft between the pinion and the cam 95, and having a segmental recess in its edge engaging the periphery of the cam 38, as clearly shown in Fig. 19. When the parts are in the position shown in Fig. 19, the disk 59 obviously cannot rotate and consequently the shaft 5 will remain at rest. When the cam 38 has rotated so far as to bring its cutaway portion 38^x in juxtaposition to the disk 59, the said disk may rotate and movement will then be imparted to the shaft 5 inasmuch as the cutaway portion 38^x corresponds in location to the teeth of the mutilated gear. The cam 38, fixed on the power shaft, bears against a roller or other projection, 39, on the under side of the slide 3 so as to move the slide to the left of Fig. 1 in opposition to springs, 40, which are attached to the frame and to a cross-bar, 41, on the slide and tend to draw the slide to the right.

Wire twisting and cutting mechanism.—The details of this portion of the invention are shown most clearly in Figs. 4, 5, 7, 8 and 9. The arm 14 curves upward and forward from the bracket 13, as shown most clearly in Fig. 4, and forms a support and guide for a slide, 19, the lower end of which is forked, as shown in Fig. 4^a, the inner sides of the fork converging upward and terminating at opposite sides of a small projection 19^a, whereby as the slide descends the wires will be engaged and brought together behind the bottle. To the upper end of this slide 19 is pivotally attached a pitman 23, which extends over the machine and has its rear end pivoted to the upper end of a lever, 22, which is fulcrumed at its lower end on the standard 1 and is formed with forwardly projecting arms 22^x, to which are attached the upper ends of springs 22^{xx}, the lower ends of said springs being attached to the frame of the machine. As shown most clearly in Fig. 3, the lever 22 is forked to pass over the standard and the arms or branches of the fork are in the path of the cross-bar 41, on the slide 3. In rear of the slide 19, I arrange a slide, 20, which is adapted to move upward and bend up the knot behind the bottle after the wires are twisted or tied. This slide 20 is sup-

ported in suitable guides on the bracket 13 and is provided with a projection, 20^x, on its rear side adapted to be engaged by a suitable pin or other projection, 21, on the side of a tappet, 61, which is carried by a cam, 17, on the front end of the power shaft, 4. The tappet 61 acts upon a roller or other projection, 61^x, on the lower end of a slide, 16, which is also mounted in the bracket 13 and has its upper end bearing against a pin, 27, around which the wires are twisted, and which is mounted radially in the twisting ring 7, to be presently described. In rear of the slide 16, a third slide, 15, is mounted in the bracket 13 and the lower end of this slide 15 rests on the cam 17, being equipped with a roller, 15^x, to reduce the frictional resistance. The upper end of the slide 15 carries diverging wings, 30, which are arranged to impinge against lateral projections, 29, on the converging cutters, 28, which are mounted radially in the twisting ring at opposite sides of the pin 27. The pin 27 is constructed with a longitudinal slot, 27^x, in which is engaged the front end of a short lever, 32, fulcrumed on a bracket, 32^x, on the rear side of the twisting ring, as shown most clearly in Fig. 7, the rear end of the lever resting upon the upper end of the slide 15, as shown in Fig. 4. To aid in holding the lever 32 in its different adjustments, a spring controlled friction-shoe, 32^{xx}, may be mounted thereon to bear upon the twisting ring. The twisting ring, 7, is supported by and between a series of rollers, 8, journaled on the bracket 13, and is provided circumferentially with sprocket teeth, 11, which are engaged by a sprocket chain 9, the said chain passing around a sprocket wheel 10, on the front end of the hollow shaft 5, whereby motion is imparted to the twisting ring from the said shaft. In order that the chain may clear the supporting rollers, 8, intermediate guide rollers, 12, are mounted on the bracket 13, as shown in Fig. 2. The twisting ring, as clearly shown in Figs. 5, 7 and 8, is formed with a segmental opening, 26, through which the reciprocating wire-guides 33, 34, project in the operation of the machine, while the remaining solid portion of the ring is formed with radial grooves or recesses in which are mounted the before-mentioned twisting pin or looper, 27, and cutters, 28, the said cutters being held normally retracted or toward the periphery of the ring by springs, 31, seated within the solid portion of the ring and attached to the cutters, as shown in Fig. 8.

After the wires have been drawn over the top and around the sides of the bottle, the continued movement of the slide 3 rearward carries the cross-bar 41 against the lever 22 and thereby swings said lever rearward so that the slide 19 will be forced downward to

compress the wires as before stated. The slide 16 is then raised to lift the pin 27 into the position indicated in Fig. 8 with two wires at each side. The ring is then rotated so as to twist the wires together with a loop around the pin at the center of the twisted portion. The pin is then withdrawn and the cutters pushed upward by the slide 15 to sever the loop after which the slide 20 is moved upward to bend the projecting knot against the bottle, it being noted that the pin 27 is lowered positively as the cutters are raised by reason of the slide 15 vibrating the lever 32. These operations are all performed automatically by the hereinbefore described mechanism and the parts are all so arranged and timed as to assure the performance of the different steps in the desired order. The several vertically moving slides, 15, 16, and 20, are lifted by the described cams, tappets and pins, and drop by their own weight when clear of the lifting element. The wires may be twisted to any desired extent by varying the size of the pinion 42^x as the number of revolutions given the twisting ring is determined by the relative sizes of the said pinion and the mutilated gear 42.

Wire stretching mechanism.—The wires are stretched by the wire-guides 33 and 34. The slide 3 carrying these guides is moved forward or to the right, in Fig. 1, by the springs 40 acting in opposition to the cam 38, and in the opposite direction by the said cam. When the slide has reached the limit of its forward movement, the wire-guides will project through the bracket 13 and the twisting ring 7. These wire-guides are pivotally mounted on pins 60, at the front end of the slide, one on top of the slide and one on each side of the same (see Figs. 10 and 11), the front ends or beaks of the guides being so disposed that when brought together they will lie in the plane of the center of the twisting ring and all the guides are provided with longitudinal grooves or passages 34^x to carry the wires, the upper guide 33 carrying two wires. The guides are further provided with lateral and rearwardly extending longitudinal wings, 36 and 36^x, which serve to hold the guides firmly in their proper position by impinging against the sides of the bracket 13 when the guides are in their foremost position and by impinging against projections, 37, over the standard 2 when the guides are in their rearmost position, the result being that the guides are practically incapable of vibration, while at either limit of their reciprocatory movement while at the same time the pivotal mounting of the guides permits them to yield to the swaying of the wires while they are being stretched over and around the bottle. It will thus be seen that the wires will be held taut at all times.

As shown in Fig. 1 and Fig. 21, the rearwardly projecting wing, 36^x, of the guide 33 may be turned upward so as to bear against a projection 33^x, on the bracket 13 when the guides are moved to the front of the machine. The straight forms shown in Figs. 10 and 11, however, operate very successfully.

The several steps of the bottle-wiring process having been performed, as above described, the cam projection 47^x of the cam 38 engages the roller 47 and thereby moves the cross-piece 48 and the rod 6 rearward, consequently tilting the foot-rest and the bottle slightly forward. The bottle is then removed, whereupon the spring 53 at once throws the slide 6 to the limit of its rearward movement, thereby disengaging the hook 51^x and the pin 52 and permitting the lever 50 to resume its position in the path of the dog 57 to release the same from the disk 55 and thereby stop the machine.

A machine organized in accordance with my invention will possess the desired stability before stated to be necessary to obtain the proper results in bottle-wiring. The twisting ring is a simple disk with free sides, guided at the periphery, and not secured to any shaft or like part so that the wire guides and supports and the wire tying and cutting devices may be arranged close to the disk and the proper tying of the wires upon the bottle is made certain by this compact arrangement of the parts.

The specific structure illustrated is to be considered as a type of the invention and not as a limitation, as changes may be made in the details without departing from the spirit of the invention.

Having thus fully described my invention, what I claim, is:—

1. In a machine for wiring bottles, flasks and the like, the combination of a twisting ring, wire-guides, a slide located co-axially to the said ring and arranged to carry the guides through the ring, and a sleeve for the head of the bottle located on the opposite side of the ring with relation to the said slide and adapted to receive and support the head-stall shaped loop formed by the connected wire ends while the head of the bottle is placed into the same.

2. In a bottle-wiring machine, the combination of a twisting ring, means for moving the head-stall shaped loop formed by connecting the wire ends and adapted to inclose the head of the bottle through the said ring, an abutment located adjacent the ring and formed to receive the said loop and the bottle head, means provided in the said ring for twisting together the wires when the ring is rotated, and other means also located in the ring for cutting off the wires.

3. In a bottle-wiring machine, the combi-

nation of a twisting ring, means for rotating the same intermittently, wire guides, means for causing said guides to carry the wires through the rings, and a wire-gathering slide forming a support for the wires during the twisting of the same by the rotation of the ring.

4. In a bottle-wiring machine, the combination, of an intermittently rotated twisting ring, means for inserting connected wires through the said ring, a sleeve adjacent the ring adapted to receive the said wire and the head of a bottle, a turner adjacent the said sleeve adapted to turn down the connected ends of the wires and move the same to the head of the bottle, and means for simultaneously forcing the connected wire ends against the head of the bottle.

5. In a bottle-wiring machine, the combination, of a twisting ring, a slide located coaxially to the ring, wire guides pivotally mounted on the slide and adapted to be projected through the ring by the slide to carry the wires through and beyond the ring, means to rotate the ring and thereby twist the wires, and abutments to engage the wire guides and prevent vibration thereof in their projected and retracted positions.

6. In a bottle-wiring machine, the combination, of a twisting ring, means for rotating the said ring intermittently, means for projecting connected wires through the said ring, a sleeve located adjacent the said ring and adapted to receive the head of a bottle and the said connected wires, and a slidable pin mounted radially in the ring and adapted to engage between the wires, whereby the wires will be twisted together when the ring is rotated.

7. In a machine for the purpose set forth, the combination, of a twisting ring, means for intermittently rotating the said ring, means for projecting connected wires through the said ring, a slidable pin mounted radially in the ring and adapted to engage between the wires, a slide adapted to project the said pin inward, a vibratory lever engaging the pin, and a slide acting on the said lever to effect a retraction of the pin after the wires are twisted.

8. In a machine for the purpose set forth, the combination, of a twisting ring, means for intermittently rotating the said ring, means for inserting connected wires through the said ring, a twisting pin mounted radially in the ring and adapted to engage between the wires, cutters mounted radially in the ring at opposite sides of the twisting pin, means for operating the pin, and means for operating the cutters.

9. In a machine for the purpose set forth, the combination, of an intermittently rotated twisting ring, means for inserting con-

nected wires through the twisting ring, a wire-gathering slide arranged to support the wires against the head of a bottle during the rotation of the ring, a link connected to said slide, a vibratory lever connected to said link, and means for vibrating said lever.

10. In a machine for the purpose set forth, the combination, of an intermittently rotated twisting ring, means for inserting connected wires through the twisting ring, a wire-gathering slide arranged to support the wires against the head of a bottle during the rotation of the ring, and means for operating the said slide.

11. In a machine for the purpose set forth, the combination, of a twisting ring, means for rotating the twisting ring intermittently so as to twist wires inserted through the same, a slide having a projection on its under side and carrying wire guides, a cam bearing against the projection on the under side of the slide, and means for rotating the said cam, the cam being arranged to operate the slide while the twisting ring is at rest.

12. In a machine for the purpose set forth, the combination, of a twisting ring, means for inserting wires having their ends connected through the said ring and into position to receive the head of a bottle, means carried by the ring for twisting together the wires and for severing the twisted portion, a vibratory foot-piece adapted to support the bottle while the wires are twisted, a driving wheel, gearing for intermittently rotating the twisting ring, a clutch to operatively connect the driving wheel and the said gearing, and connections between the vibratory foot-piece and the said clutch whereby the clutch will be closed when the foot-piece is swung forward to support the bottle.

13. In a machine for the purpose set forth, the combination, of a twisting ring, means for intermittently rotating the said ring, means for inserting connected wires through the ring and into position to receive the head of a bottle, means carried by the ring for twisting and severing the wires, a vibratory bottle support, a driving wheel, gearing for intermittently rotating the twisting ring, a dog adapted to connect the driving wheel with the said gearing, a slide-rod engaging the vibratory bottle support, a tripping arm adapted to act upon the dog, and a lever carried by the slide-rod and adapted to engage the said tripping arm.

14. In a machine for the purpose set forth, the combination of a twisting ring, means for inserting wires with connected ends through the said ring and into position to receive the head of a bottle, means carried by the ring for twisting and severing the wires, a vibratory bottle support, gearing for intermittently rotating the twisting ring, a

driving wheel, a dog adapted to connect the driving wheel with the said gearing, a slide-rod engaging the vibratory bottle support, a cam acting upon the said slide-rod, a tripping arm adapted to act upon the dog, and a lever carried by the slide-rod and adapted to actuate the said tripping arm.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

CARL ANDREAS VIKTOR HÄLLGREN.

Witnesses:

HJALMAR ZETTERSTROM,
ROBERT APELGREN.