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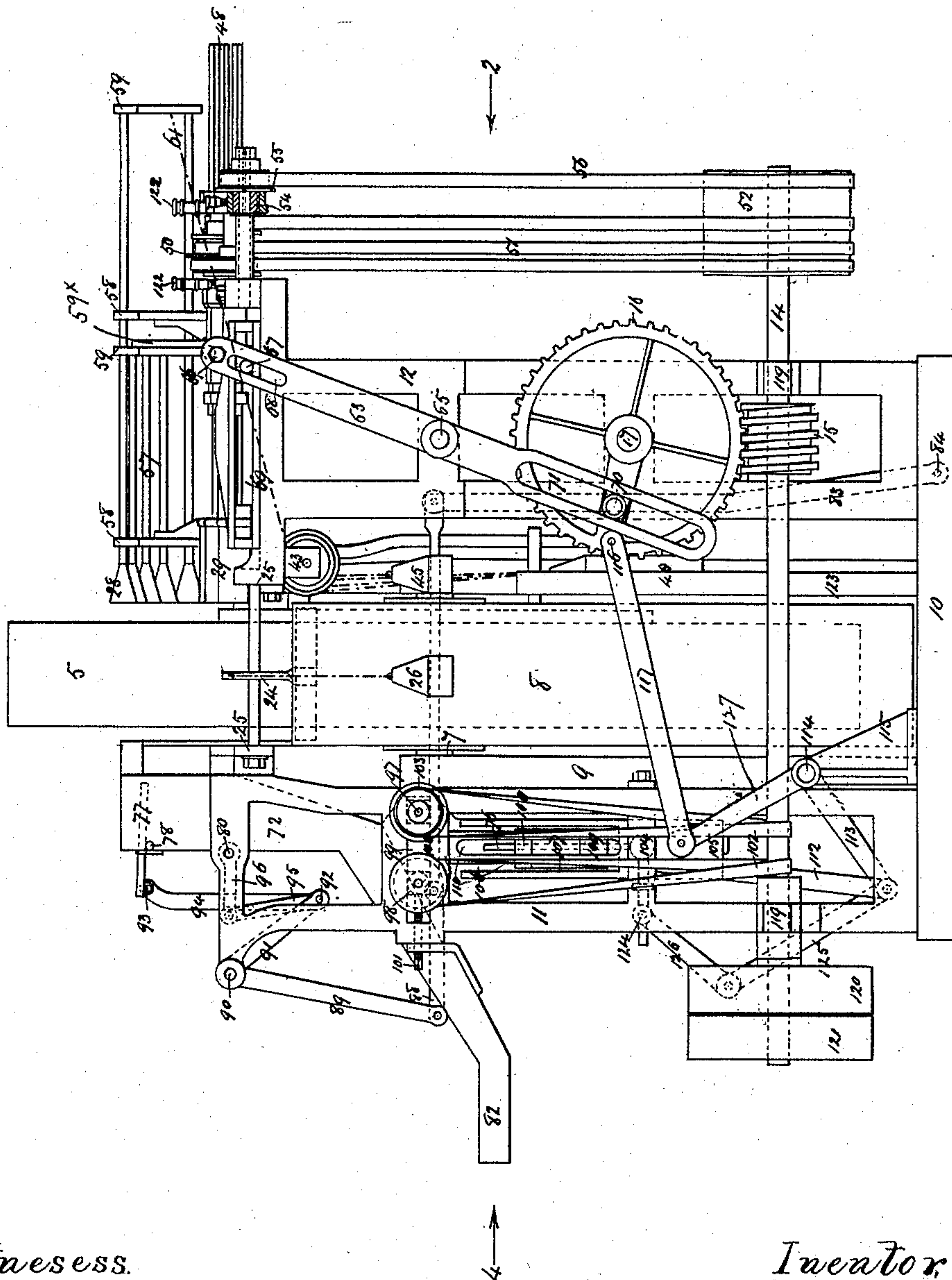
8 Sheets—Sheet 1.

G. BURGESS, Jr.
BOTTLE WASHING MACHINE.

No. 476,126.

Patented May 31, 1892.

FIG. 1.



Witnesses.

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(No Model.)

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FIG. 4.

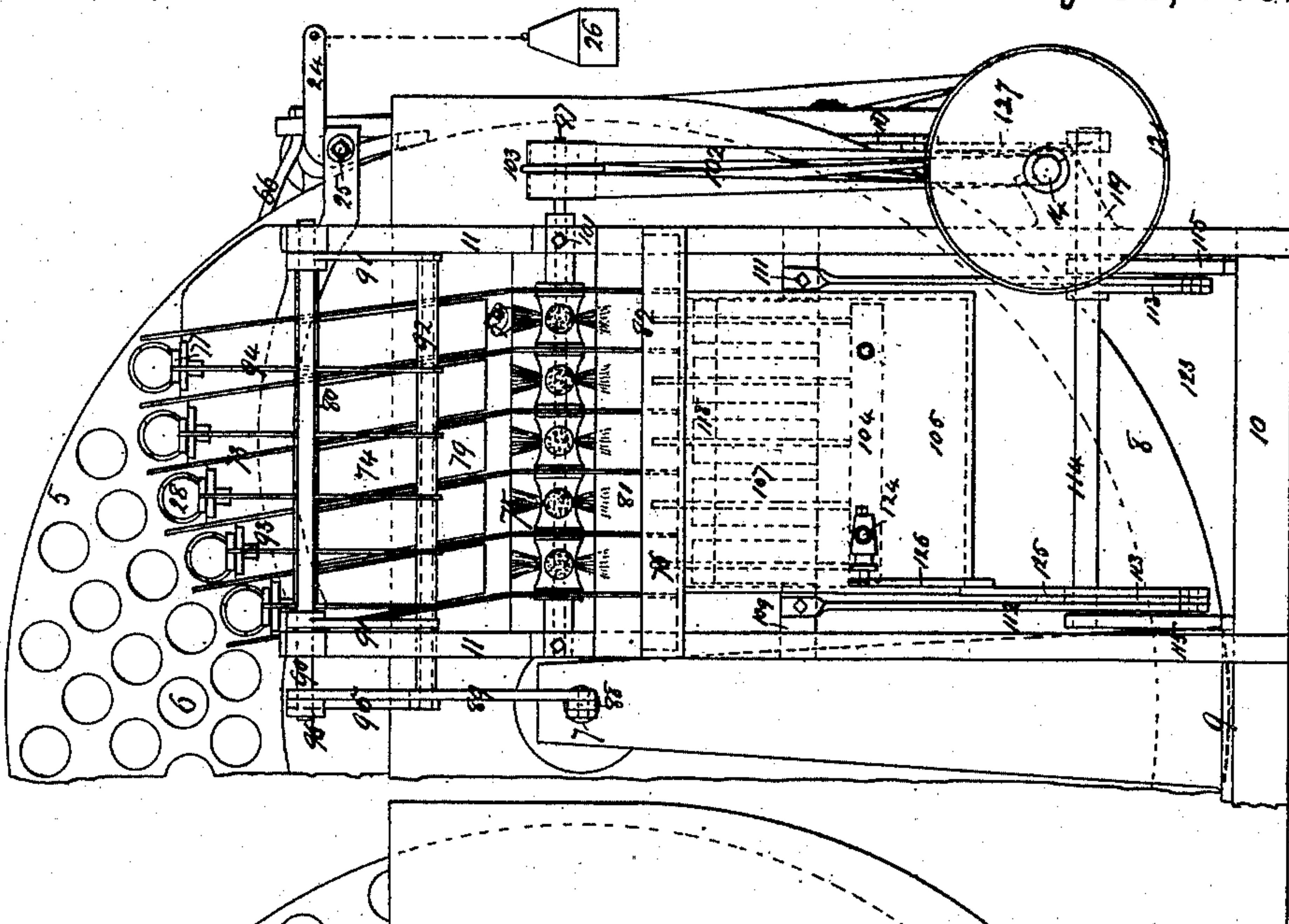
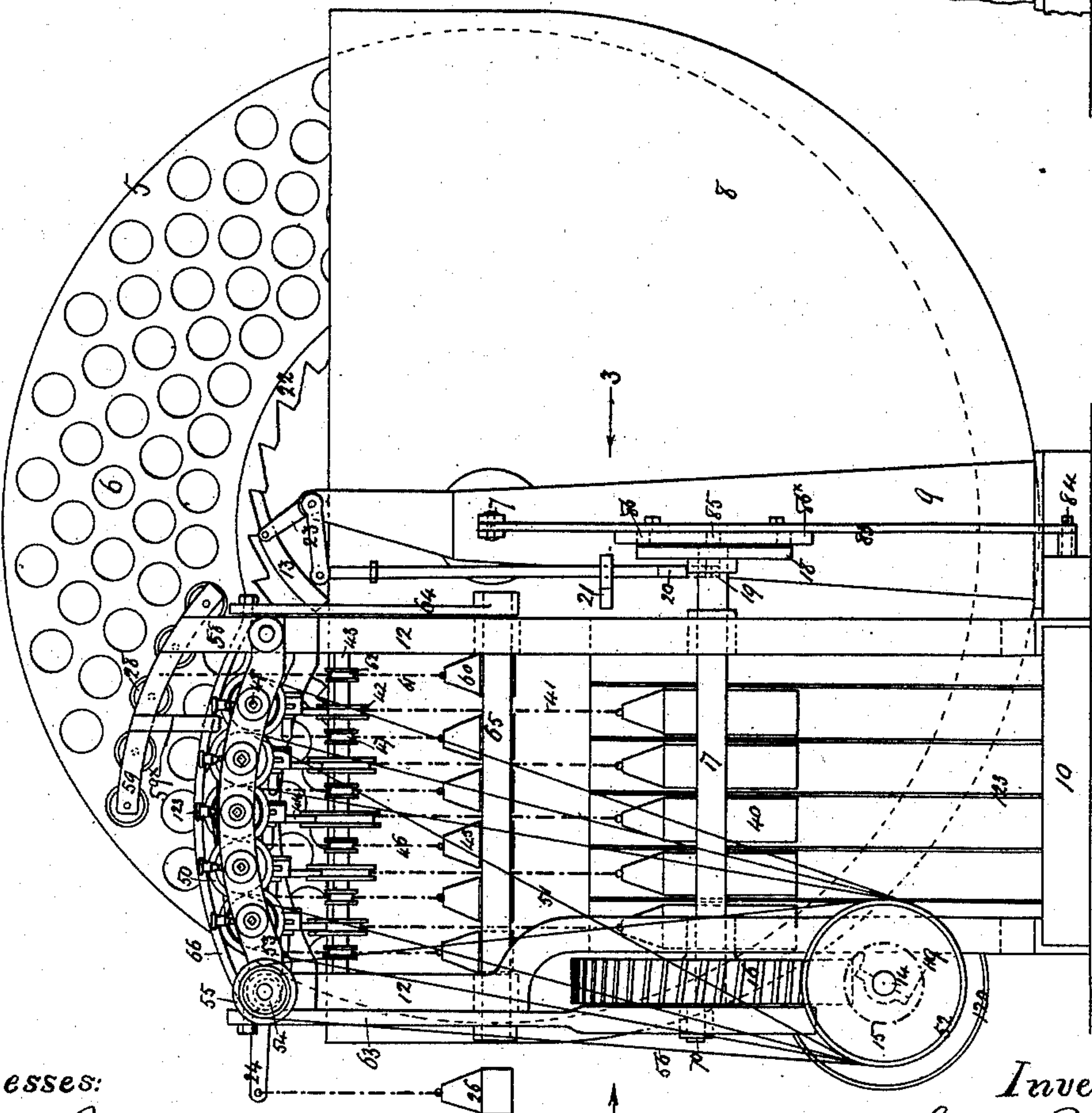


FIG. 2.



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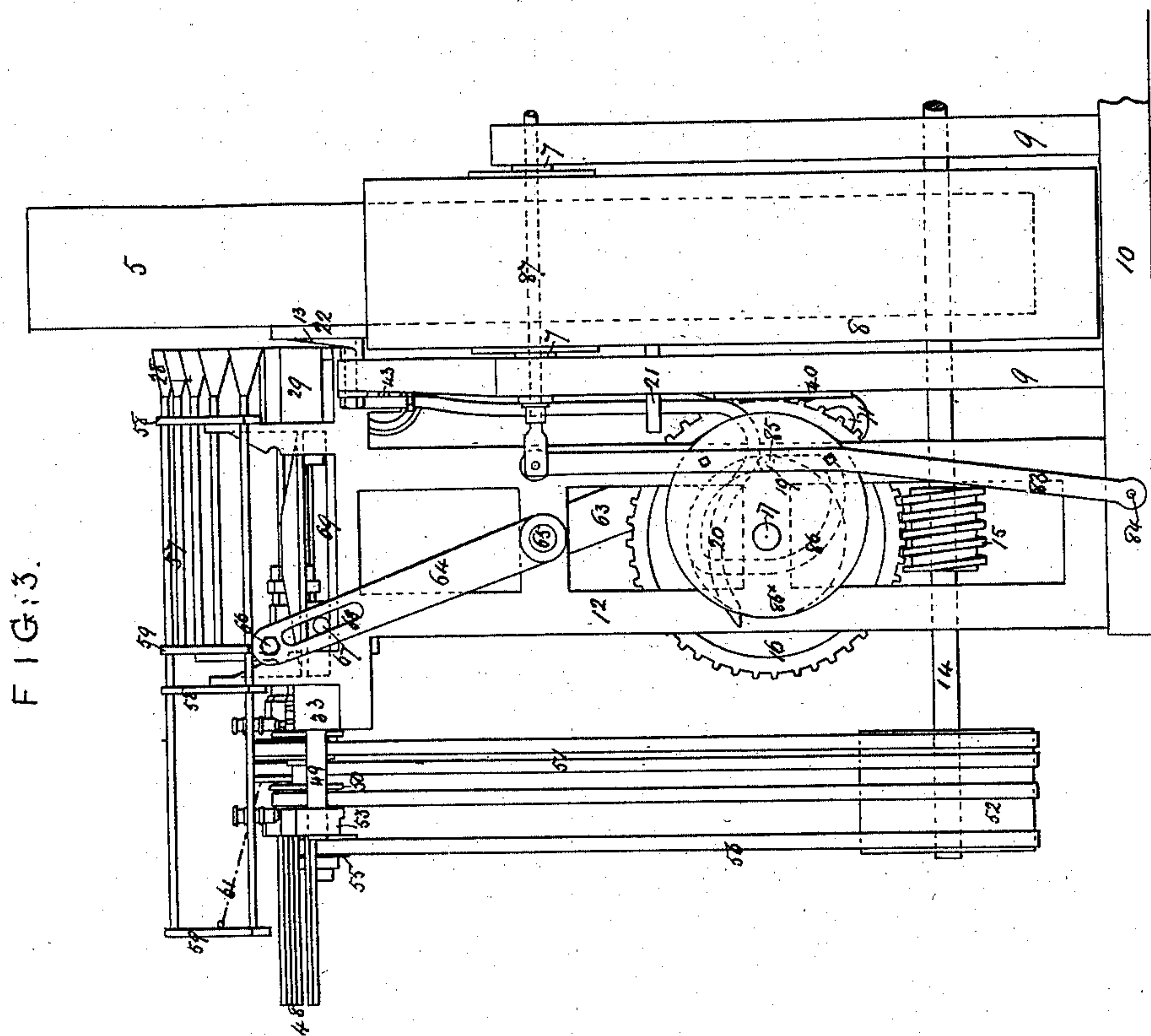
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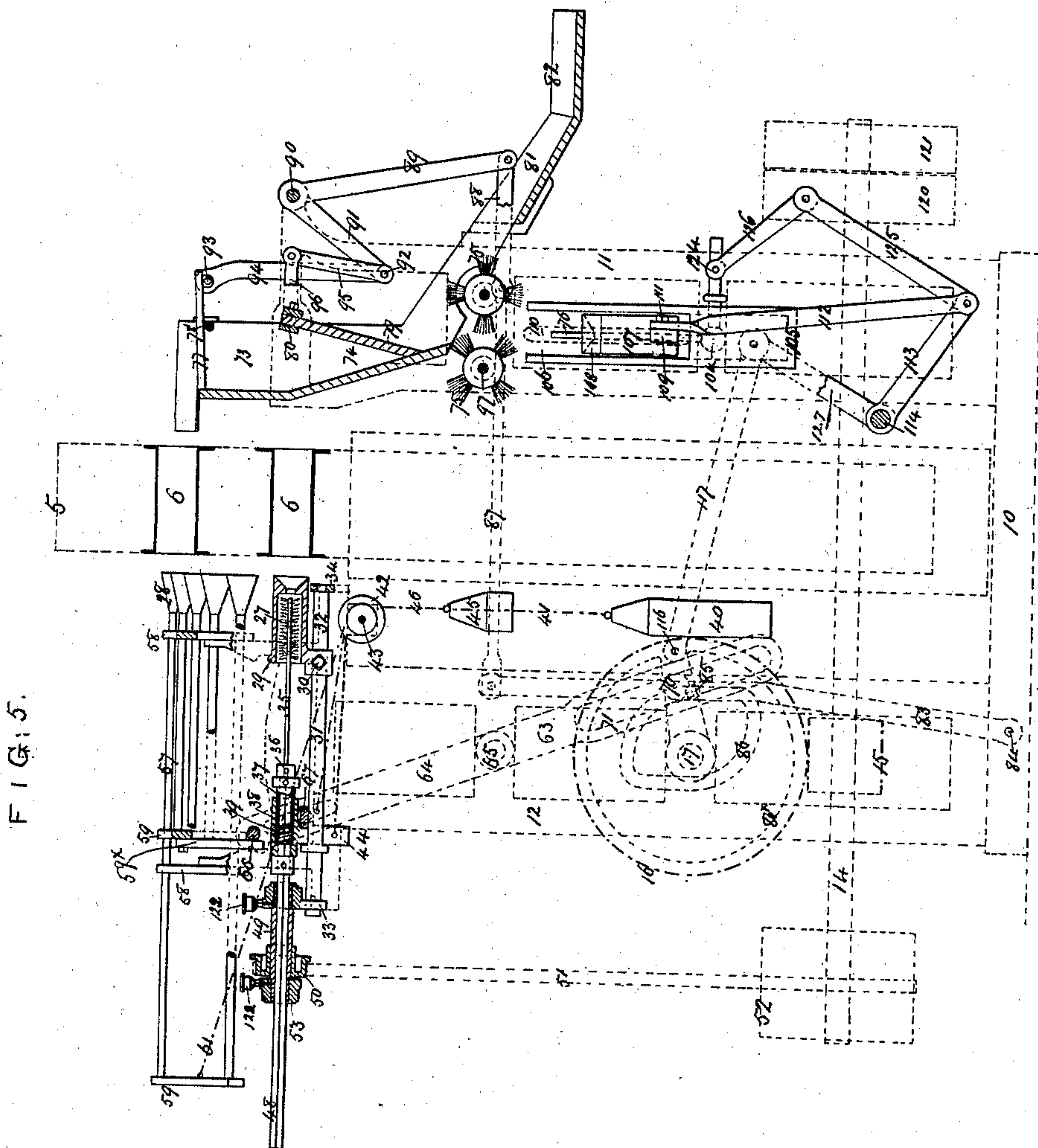
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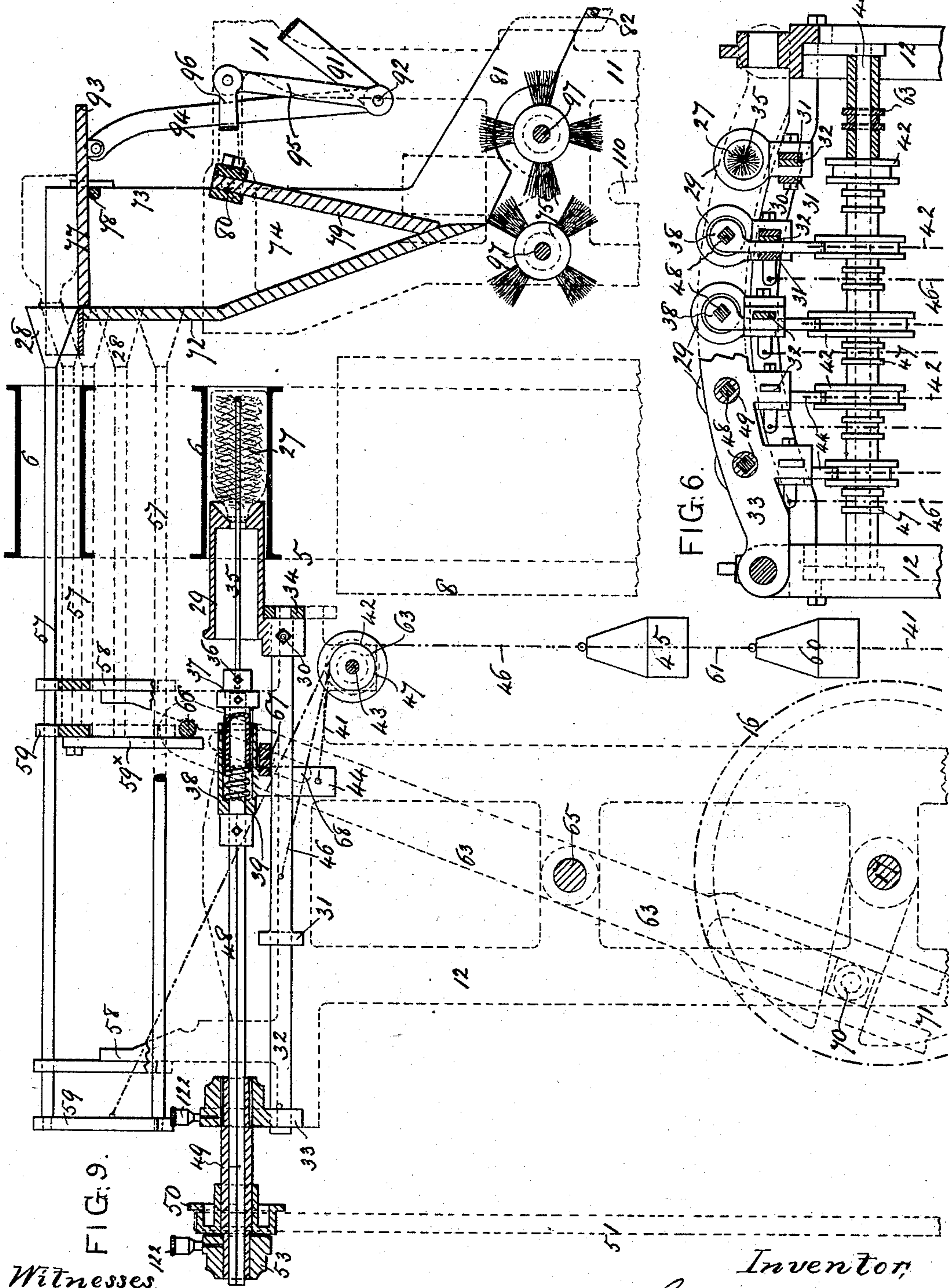
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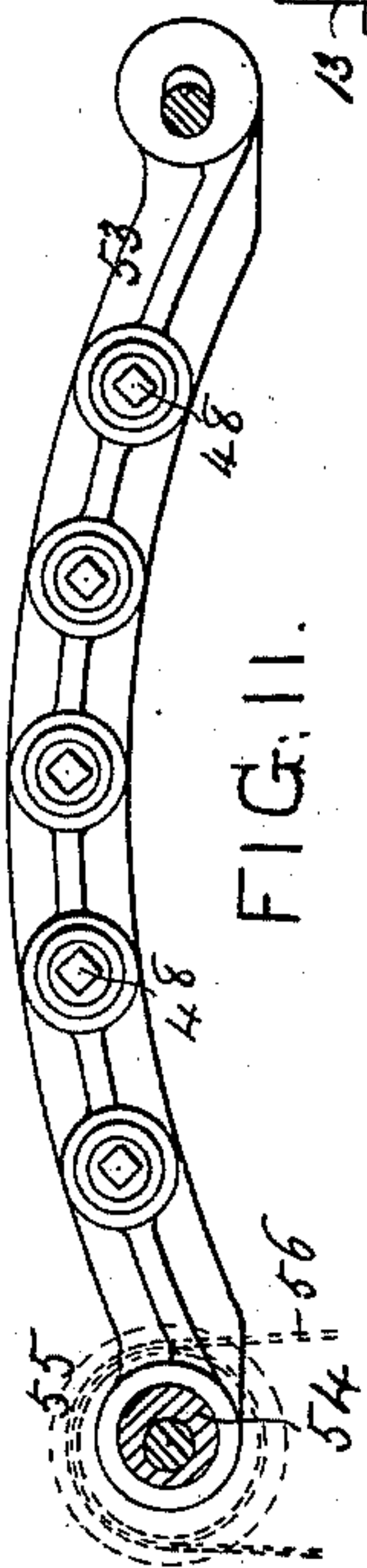
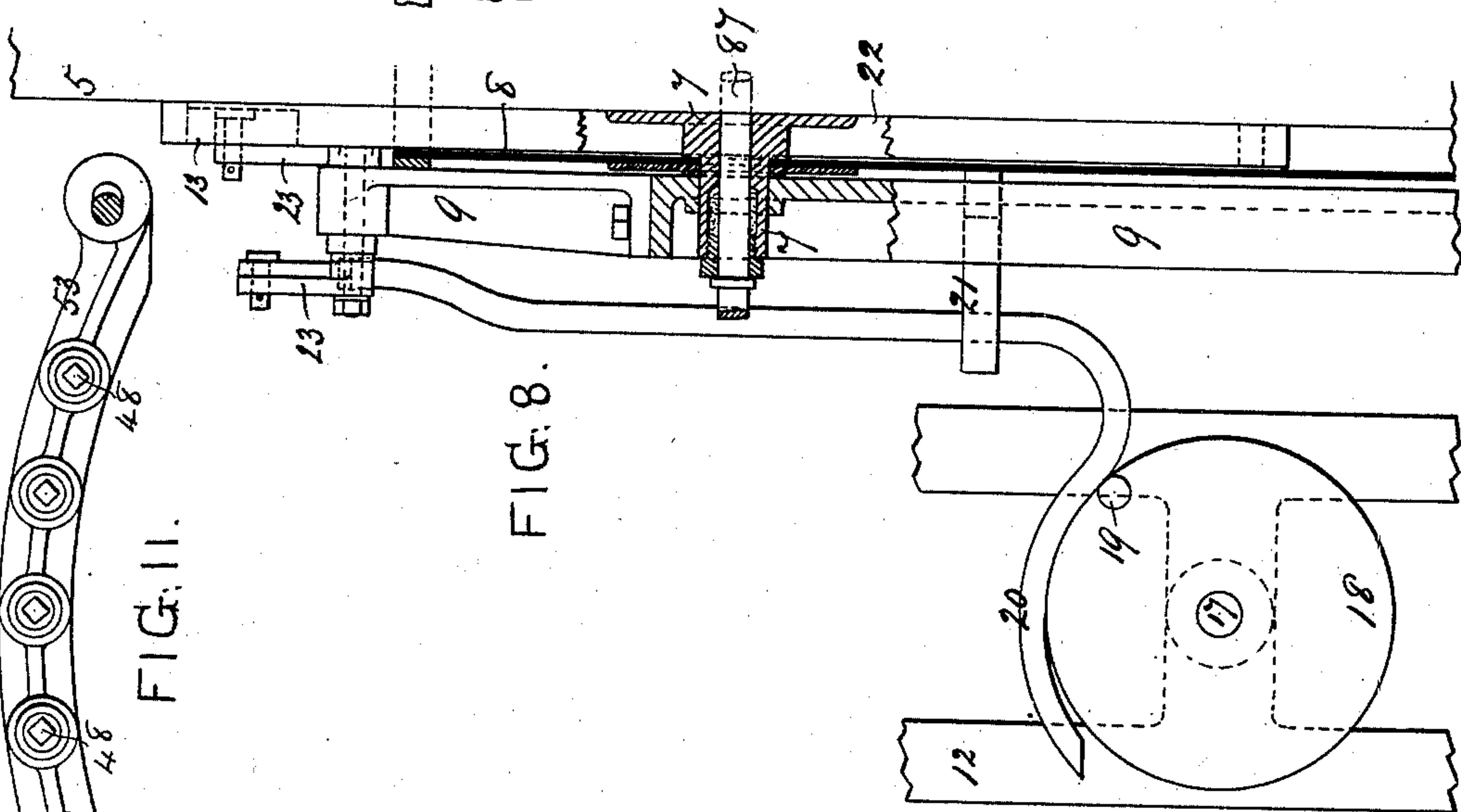
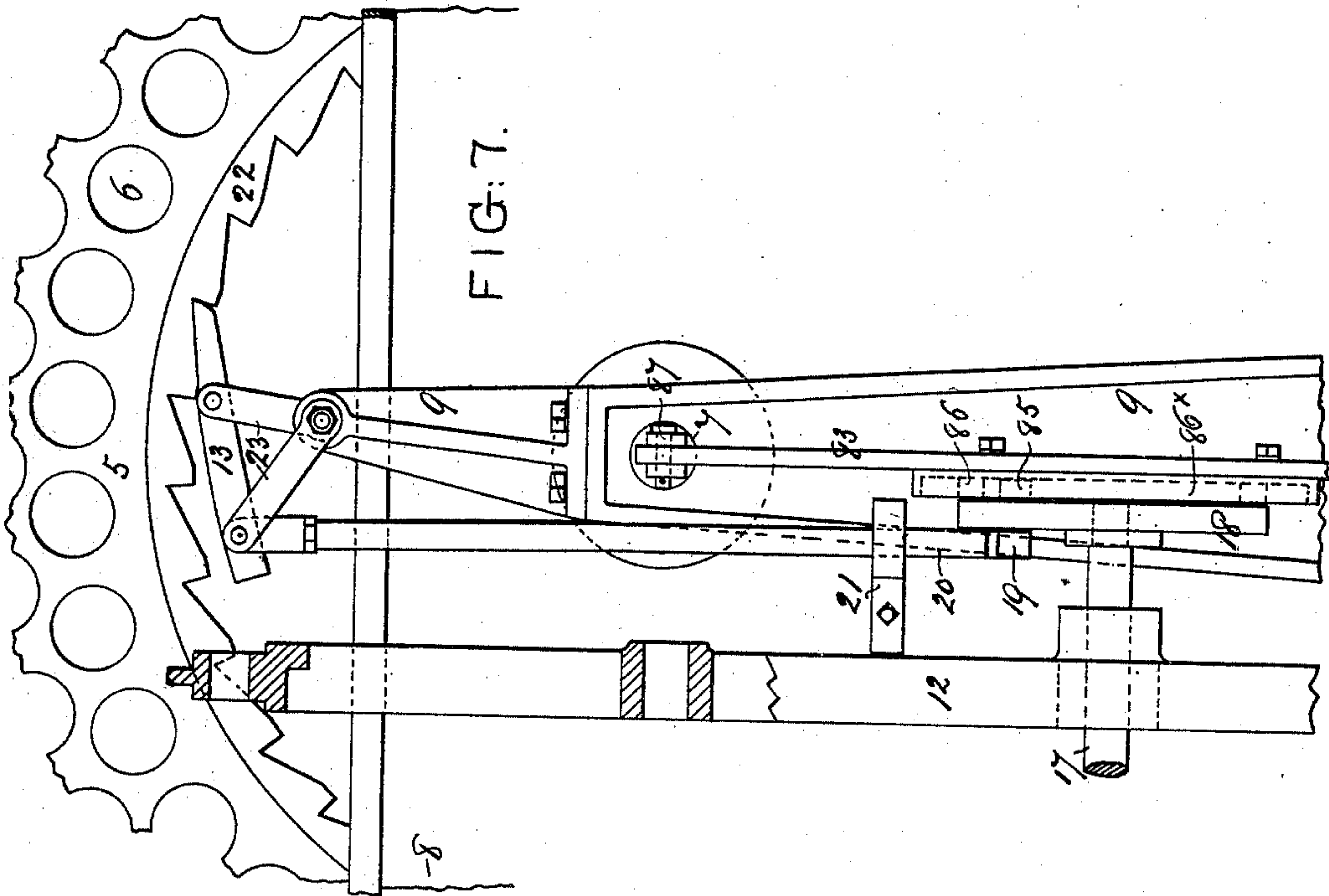
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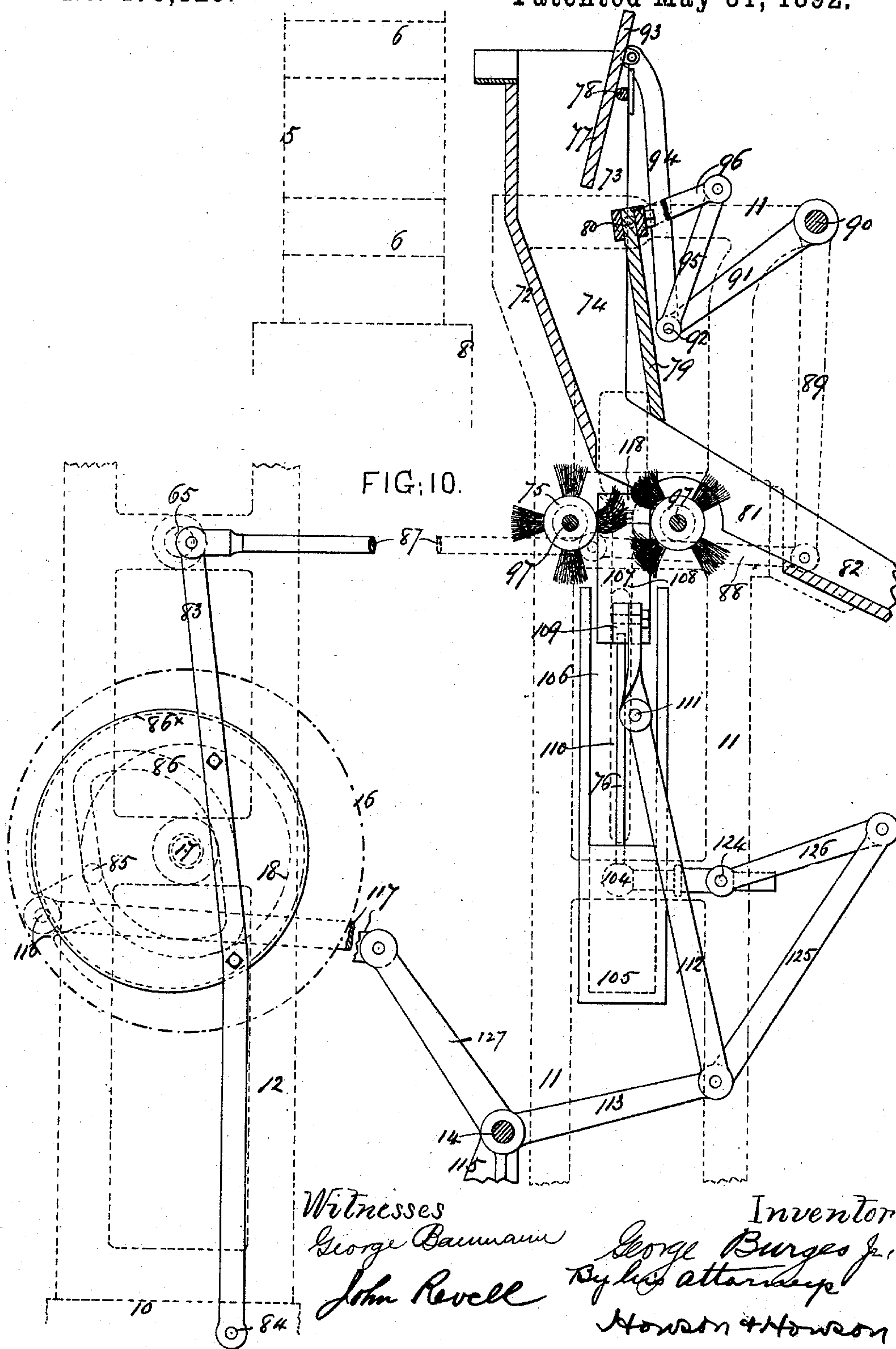
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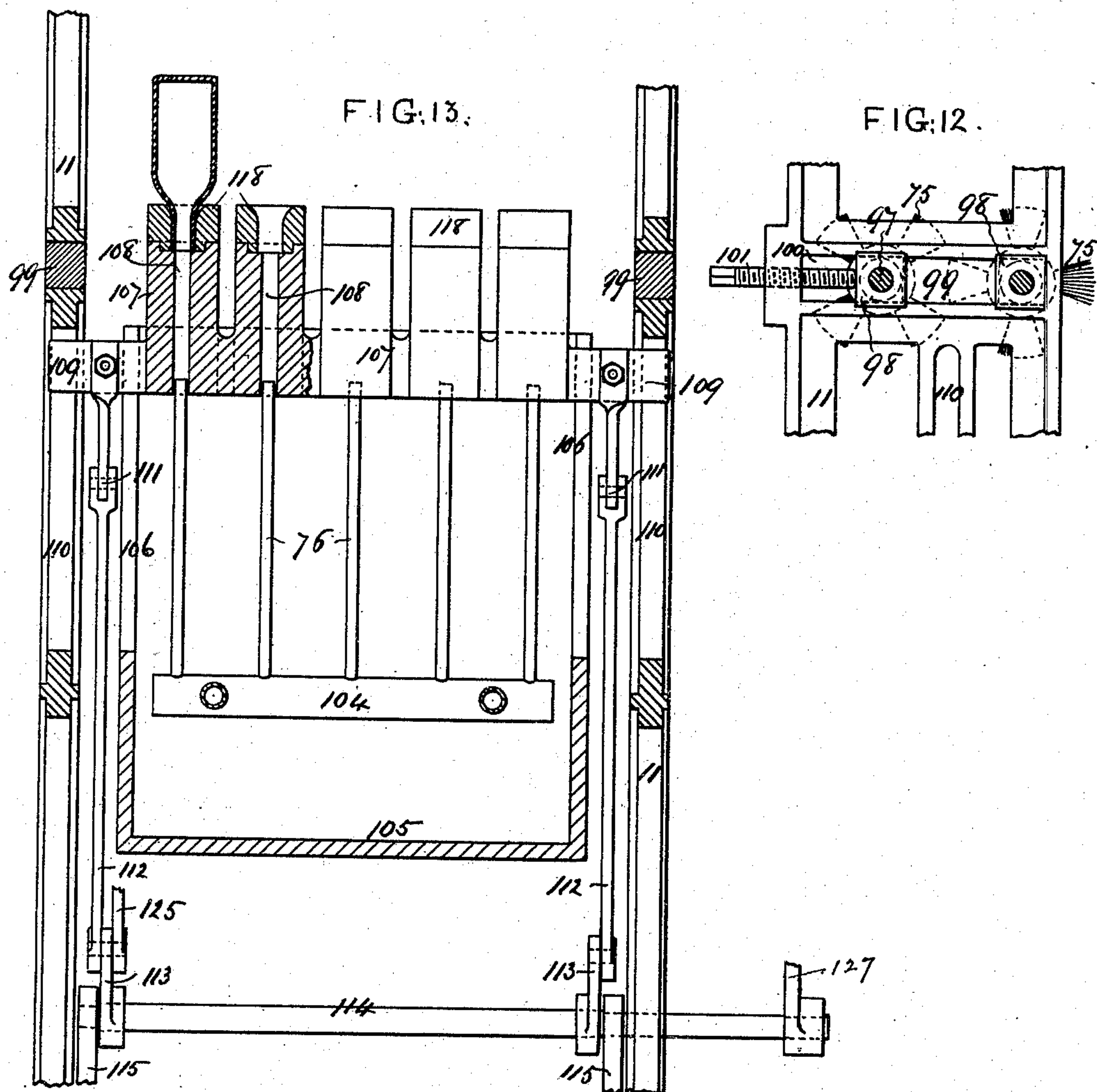
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UNITED STATES PATENT OFFICE.

GEORGE BURGESS, JR., OF SHEFFIELD, ENGLAND.

BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 476,126, dated May 31, 1892.

Application filed January 15, 1890. Serial No. 337,019. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BURGESS, JR., engineer, a subject of the Queen of Great Britain and Ireland, and a resident of Sheffield, in the county of York, England, have invented an Improved Bottle-Washing Machine, of which the following is a specification.

This invention relates to an improved bottle-washing machine in which are combined so as to co-operate in the manner hereinafter described the following instrumentalities, to wit: an intermittently-rotating bottle-carrier within recesses, in which the bottles are soaked and internally brushed; continuously-rotating and intermittently advancing and retiring brushing mechanism arranged at one side of the carrier for internally brushing the bottles while supported within the recesses in the carrier and while the latter is at rest; intermittently advancing and retiring ejectors (advancing and retiring simultaneously with the like movements of the said brushing mechanism and arranged at the same side of the carrier) for ejecting the washed and internally-brushed bottles from the carrier; intermittently-acting mechanism arranged at the other side of the carrier and adapted to receive the bottles ejected therefrom and to guide them, mouths downward, to the means for externally brushing them and internally rinsing them and to subsequently pass them onto a delivery-table, such brushing and rinsing mechanism and the table being all arranged at the same side of the carrier; continuously-rotating brushing mechanism for externally brushing the bottles both previously to and subsequently to their being internally rinsed; intermittently-acting stationary rinsing apparatus and intermittently retiring and advancing apparatus for receiving the bottles to be rinsed from between the external brushing mechanism, lowering them onto the rinsing mechanism, and subsequently returning them between such external brushing mechanism in position to be passed onto the delivery-table, the whole being so arranged as to be automatic in the several operations subsequent to the placing of the bottles into the carrier by the attendant, so that a single attendant will suffice in a machine of large size to place the bottles in the carrier and to receive the cleansed bottles from the deliv-

ery-table and to attend to the proper working of the machine.

In the accompanying drawings, Figure 1 represents a side elevation of the machine, partly in section, looking in the direction of the arrow 1, Fig. 2. Fig. 2 represents a back elevation, looking in the direction of the arrow 2, Fig. 1. Fig. 3 represents a side elevation of the mechanism at the back of the carrier, looking in the direction of the arrow 3, Fig. 2. Fig. 4 represents a front elevation of the mechanism at the front of the carrier, looking in the direction of the arrow 4, Fig. 1. Fig. 5 represents a longitudinal sectional elevation through the principal working parts of the machine, looking in the direction of the arrow 3, representing the position of such parts when ready to commence working. Fig. 6 represents a transverse sectional elevation, on different planes at different parts, of the internal brushing mechanism. Fig. 7 represents a back elevation of the mechanism for intermittently rotating the bottle-carrier. Fig. 8 represents a side elevation of the same. Fig. 9 represents a view corresponding to Fig. 5, but showing the internal brushing mechanism, the bottle-ejectors, and the mechanism at the back of the carrier in operation. Fig. 10 also represents a view corresponding to Fig. 5, but shows the mechanism at the front of the carrier for receiving the bottles therefrom, externally brushing them, lowering them, raising and rinsing them, and passing them onto the delivery-table in operation. Fig. 11 represents a front elevation of the means by which a sweeping motion is given to the brushes operating within the bottles. Fig. 12 represents in end elevation, partly in section, the means of adjusting the spindles of the externally-brushing brushes. Fig. 13 represents a sectional elevation longitudinally of the rinsing-trough, showing the rinsing mechanism in the position represented in Fig. 10.

In Figs. 5, 9, and 10 the principal working parts are represented in full lines, the relative positions of the supporting-frames and some of the connections being indicated by dotted lines.

5 represents the bottle-carrier, which consists of a drum-like metal casing made of a depth from back to front somewhat exceed-

ing the length of the longest bottle intended to be cleansed in the machine. The carrier is formed of any suitable number of cylindrical through-openings or bottle-receptacles 6, which are arranged in curviradial series, as seen best in Figs. 2 and 4, and are made of a diameter somewhat exceeding that of the largest bottle intended to be cleansed in the machine. The carrier 5 is supported by journals 7, (*vide* Fig. 8,) which project through the adjacent sides of an open-topped tank 8, and, together with the tank, are supported by front and back standards 9, rising from a sole-plate 10. The back of the carrier is fitted with a ring of ratchet-teeth 22, equal in number to that of the said curviradial series of bottle-holes 6, so that the carrier is caused to be rotated to the extent of the space between two adjacent series of such curviradial series of bottle-holes at each of its intermittent movements. Such movements of the carrier are imparted by an intermittently-operating counterweighted pawl 13, which is actuated from the main shaft 14 by a worm 15, which gears with a worm-wheel 16 on a shaft 17, which is supported by the framing 12, hereinafter referred to. The shaft 17 also carries a crank-plate 18, having a pin 19, which once in each revolution of the shaft 17 raises from the position indicated in Figs. 2 and 3 to that indicated in Figs. 7 and 8, a curved bar 20, which works loosely in and is guided by a bracket 21, bolted to the adjacent side of the tank 8. (*Vide* Fig. 7.) The upper end of the bar 20 is connected to one arm of a two-armed lever 23, the axis of which is supported by the adjacent standard 9, (*vide* Figs. 7 and 8,) and to the other arm of such lever 23 the aforesaid pawl 13 is pivoted. The rotation of the carrier 5 is arrested immediately the pawl 13 arrives at the end of each of its actuating movements, and the carrier is held stationary until the following actuation by the pawl by a brake-lever 24, (*vide* Figs. 1 and 4,) which is caused to constantly bear against the periphery of the carrier (*vide* Fig. 4) by a weight 26, the brake-lever being loosely centered on a rod 25, supported by the back and front framings 12 and 11. The main shaft is carried by bearings 119, bolted to the frames 11 12 and is fitted with fast and loose pulleys 120 121. The framing 12 is situated at the back of the machine and is adapted to carry a series of continuously-rotating brushes 27, equal in number to that of the bottle-holes in each of the said curviradial series thereof, such number being five in the machine represented on the drawings. (*Vide* Fig. 2) The series of brushes 27 is in alignment with one of the curviradial series of bottle-holes 6 each time the carrier is at rest and at such time is advanced for brushing the interiors of the bottles supported in the opposite bottle-holes and is retired from within the bottles prior to the next movement of the carrier.

Above the brushing mechanism 27 is also arranged (*vide* Fig. 2) a series of the same

number (five) of bottle-ejectors 28, which series is also in alignment with one of the curviradial series of bottle-holes 6 each time the carrier is at rest, and at such time is advanced (simultaneously with the like movement of the brushes 27) for ejecting from the opposite bottle-holes 6 in the carrier the bottles which have been previously soaked and internally brushed and delivering them to the externally-brushing and internally-rinsing apparatus at the front side of the carrier, the ejectors being then retired simultaneously with the like movement of the brushes 27. Each brush 27 when in its inoperative position (*vide* Fig. 5) rotates within a circular open-ended shield 29, which is bolted at 30 to parallel slide-bars 31, (*vide* Figs. 6 and 9,) which are supported by a guide-bar 32, secured to fixed cross-bars 33 34, connecting the opposite frames 12. At each operative movement of the brush its shield also advances until arrested by the cross-bar 34, (*vide* Fig. 9,) after which the brush continues to advance, passing out of the shield and into the bottle in the carrier until it reaches the bottom end thereof. The spindle 35 of each brush (*vide* Figs. 5 and 9) is secured by a screw-pin 36 to a socket 37, which is similarly secured to a squared spindle 48, hereinafter further referred to, and works within a sleeve 38 and is kept pressed forward by a spring 39, which is arranged within the sleeve and allows of the brush yielding should it meet with undue resistance at the bottom end of the bottle when advancing. The series of brushes are simultaneously advanced, the advance of each brush (*vide* Figs. 2, 5, 6, and 9) being effected by a weight 40, which is connected by a wire or other suitable flexible connection 41, passing over a pulley 42, carried by a cross-shaft 43 (supported by the opposite frames 12) to an extension 44, depending from the sleeve 38, which means allow of the brush yielding should it meet with any undue resistance to its forward motion. The series of shields 29 are also advanced simultaneously with each other and with the like movement of the brushes 27, the advance of each shield being effected by a weight 45, connected to the slide-bars 31 by a wire or other suitable flexible connection 46, passing over a pulley 47 on the cross-shaft 43. The weights 40 are kept apart by a partitioned frame 123. Each socket 37 is also, as hereinbefore referred to, secured to a squared spindle 48, (*vide* Figs. 5 and 9,) which fits freely within an internally-squared rotating sleeve 49, so as to be capable of sliding endwise therein to accommodate the advancing and retiring movements of the brushes 27. On the sleeve 49 is keyed a pulley 50, which is driven from a pulley 52 on the main shaft 14 by a strap 51, so as to keep the spindle 48 and its connected brush 27 in continuous rotation. The series of brushes 27 are rotated simultaneously by a series of the straps 51 being used, all driven by the pulley 52 (*vide* Figs. 1 and 2) and each partly encircling and

actuating one, two, or more of the pulleys 50. The sleeve 49 is supported by and can freely rotate in the cross-bar 33 and by and in a rear cross-bar 53, to which latter a traversing motion is imparted by an eccentric 54, (*vide* Figs. 1 and 11,) keyed to a pulley 55, which is driven from the pulley 52 by a strap 56, such motion of the cross-bar 53 giving a sweeping movement to the rotating brushes 27 within the bottles, so as to scour the inner sides and bottom end thereof. To permit such sweeping movement of the brushes, each of the bearings 49 fits sufficiently loosely in the cross-bar 33 to allow it to move the distance wanted, and this also is the case with respect to the fitting of the socket 37 in the sleeve 38, there being in each case just sufficient play between the parts to allow of the brush receiving the required sweep, which is of a comparatively small extent. The cross-bars 33 and 53 are supported by the opposite frames 12.

The ejector-rods 57 (*vide* Figs. 1, 2, 3, 5, and 9) are supported by standards 58, rising from one of the side frames 12, and by movable frame-bars 59, and their advancing movements (the series being simultaneously advanced) are effected by a weight 60, common to the series and which is connected to the rear frame-bar 59 by a wire or other suitable flexible connection 61, passing over a pulley 62 on the cross-shaft 43. The retiring movements of the brushes 27 and of the shields 29 and ejectors 28 and the raising of the connected weights 40, 45, and 60 are effected simultaneously by levers 63 and 64, (*vide* Figs. 1, 2, 3, 5, and 9,) which are keyed on a cross-shaft 65, supported by the opposite frames 12, and are connected by a cross-bar 66 and by a cross slide-bar 67, and are operated at the proper times to effect such movements from the worm-wheel 16 by the crank-pin 70 thereof, working in a slot 71 in the adjacent end of the lever 63. The retiring movements of the ejectors 28 are effected by the cross-bar 66, bearing back an extension 59^x, depending from the fore frame-bar 59. The retiring movements of the brushes 27 are effected by the slide-bar 67, which works in slots 68, formed in the adjacent ends of the levers 63 64 and in guideways 69, formed at the upper parts of the opposite frames 12, the bar 67 bearing against the said depending projections 44. The retiring movements of the brush-shields 29 are effected by the projections 44, which in their retiring movements come into engagement with and bear against the adjacent ends of the slide-bars 31, to which the shields are connected. It will be seen that the advancing movements of the brushes 27, shields 29, and ejectors 28 can only be effected by their respective weights 40, 45, and 60 as and when their common retiring-levers 63 64 permit of the same being done.

The mechanism for receiving the soaked and internally-brushed bottles as ejected from the carrier (*vide* Figs. 1, 4, 5, 9, and 10) is constructed with a framing 72, fitted with

partitions 73, (*vide* Fig. 4,) forming channels 74, so arranged as to receive the bottles from the said curviradial series of bottle-holes 6 in the carrier 5 (*vide* Fig. 9) and to guide them, mouth downward, (*vide* Fig. 10,) to between the opposite externally-brushing brushes 75 and onto the rinsing-pipes 76. The series of bottles in the series of bottle-holes 6, opposite the ejectors 28, is, as aforesaid, simultaneously ejected from the carrier 5, and each bottle is received onto an opposite slat 77, (*vide* Fig. 9,) which is pivoted on a pin 78, supported by the adjacent partitions 73. The series of slats 77 are immediately thereafter tilted (*vide* Fig. 10) by the means hereinafter described, so as to cause the bottles to be lowered, mouths downward, in the inclosed channels 74, formed by the framing 72, the partitions 73, and the slats 77. Each of the said channels 74 is also fitted with a lower shutter 79, the series of such shutters being connected to a cross-bar 80, journaled in the opposite front frames 11 and being simultaneously opened (*vide* Fig. 10) by the means hereinafter described in such a manner as to permit of the passing of the bottles lowered by the slats 77 and as to direct them to between the said brushes 75. The same movement of the shutters 79 also tilts over the preceding series of bottles after their having been brushed and rinsed and again raised, (*vide* Fig. 9,) as hereinafter described, to the level of the front continuations 81 of the channels 74, down which such bottles are thus caused to slide onto the delivery-table 82.

The simultaneous movements of the series of slats 77 are effected from the shaft 17 (*vide* Figs. 1 to 5 and 7 to 10) by means of a lever 83, which is pivoted at 84 to the sole-plate 10 and receives motion from the shaft 17 by means of a pin 85, projecting from the said crank-plate 18 and working in a cam-groove 86 in a cam plate or box 86^x, bolted to the lever 83. Such lever is pivotally connected to a rod 87, which passes through the journals 7 of the carrier, (*vide* Fig. 8,) and at its opposite end is connected by a link 88 to a lever-arm 89, which is keyed on a cross-rod 90, carried by the opposite frames 11 and on which cross-rod are keyed other lever-arms 91, which are connected by a cross-rod 92, to which the overhanging end 93 of each of the series of pivoted slats 77 is connected by a link 94. The simultaneous movements of the series of shutters 79 are also derived from the cross-rod 92, the cross-bar 80, to which they are all connected, as aforesaid, being connected to such cross-rod 92 by a link 95 and a lever-arm 96, keyed on the cross-bar 80. (*Vide* Figs. 1, 4, 5, 9, and 10.) The externally-brushing brushes are keyed on parallel spindle 97, which (*vide* Figs. 1 and 12) are carried by slide-blocks 98, fitted with intermediate rubber or spring blocks or the like 99, Fig. 13, working in guideways 100, formed in the opposite frames 11, the blocks 98 being capable of adjustment by set-screws 101. (See, also, Fig. 4.) The brushes

75 are continuously rotated in opposite directions from the shaft 14 by straps 102, driving pulleys 103, keyed on the spindles 97.

The rinsing mechanism (*vide* Figs. 1, 4, 5, 10, and 13) is constructed with a stationary force-pipe 104, from which rises a series of rinsing-pipes 76, adapted to enter the necks of the bottles as they are lowered, as hereinafter described, between the brushes 75, during which time and while the bottles remain on the pipes 76 a supply of water to rinse the interiors of the bottles is automatically turned on. The cock 124, controlling the water-supply, is actuated by lever-arms 125 and 126, which are connected to the conjunction of one of the bars 112 and one of the levers 113, both hereinafter referred to, and are actuated therefrom, and the rinsing-water which falls from the bottles is received by a stationary trough 105, from which it may be led away by any suitable overflow 127 or other outlet. The upper part of the sides of the trough 105 are open, as at 106, Figs. 1, 10, and 13, to permit of vertical reciprocation of a casting 107, which is made with through openings 108, fitted with wooden cups 118 to receive the bottles, Fig. 10, as they are lowered by the shutters 79, and through which openings 108 the pipes 76 pass. The casting 107 is supported by lateral extensions 109, which slide in guideways 110 in the opposite frames 11, and are each bolted or pivotally connected at 111 to a connecting-bar 112, the two of which bars are respectively connected to lever-arms 113, which are keyed on a cross-shaft 114, supported by standards 115. On the cross-shaft 114 there is also keyed a lever-arm 127, which is connected to the worm-wheel 16 at 116 by a bar 117. By such means the casting 107 is raised from about the position indicated in Fig. 5 to about that indicated in Fig. 10, and when it has reached such latter position the shutters 77 79 have, by the operation of the connected levers 83 89 91 94 95 96, gradually been so far opened as to allow the bottles to slide necks downward in the partitioned frame 72, between the continuously-rotating externally-brushing brushes 75 and onto the wooden cups 118, which surmount the raised casting 107. The casting 107 is thereupon, by the operation of the connected levers 117 127 113 112, lowered to the position indicated in Fig. 5, the bottles descending with it below the bottom level of the shutters 79 and between the brushes 75, and the rinsing-pipes 76 enter their necks as they descend. While the casting and the bottles it supports are descending the tap is by the operation of the levers 125 126 turned on and the bottles are internally rinsed, and during the same time the shutters 77 79 are by their said connected levers 83 89 91 94 95 96 caused to resume the positions indicated in Figs. 5 and 9, ready to receive the next series of soaked and internally-brushed bottles to be externally brushed and rinsed. When the shutters 77 79 have resumed the positions indicated in Figs. 5

and 9, the rinsing of the lowered bottles will have been effected, and the casting, together with the rinsed bottles it supports, are then, by the operation of their said connected levers 117 127 113 112, caused to rise (during which the tap 124 is turned off by the levers 125 126) and deliver the series of rinsed bottles between the brushes 75, but now at the back side of the shutters 79, (*vide* Fig. 9,) in such a position as that they will be caused to be tilted over onto the delivery-table 82 (down which they slide) by the next outward movement of the shutters 79 in lowering the next series of bottles to be rinsed.

The operation of the mechanism is as follows: In starting the machine the bottles to be cleansed are placed in the consecutive curvilinear series of recesses 6 in the carrier 5, with their necks all toward the back of the machine, and the carrier is or may be rotated by hand (without operating any of the other mechanism) until the first curvilinear series of soaked bottles comes opposite the series of brushes 25. Thereupon the main driving-strap is transferred from the loose pulley 121 to the fast pulley 120 on the main shaft 14, which is continuously rotated. The rotation of the shaft 14 effects the following several operations by the several connections hereinbefore described in detail, viz: it imparts by the connections 15 16 17 18 19 20 23 13 22 a step-by-step rotary motion to the carrier 5. It also imparts by the connections 52 51 50 49 48 37 36 35 a continuous rotary motion to the series of internally-brushing brushes 27. It also imparts by the connections 102 103 97 a continuous rotary motion to the externally-brushing brushes 75. It also during each period of rest of the carrier 5 permits by the connections 15 16 70 63 65 64 66 67 of the series of brushes 27, with their shields 29, and of the series of ejectors 28 being advanced by their respective connections 40 41 44 38 39 45 46 31 30, and 60 61 59 57, so as to cause the bottles opposite the brushes to be internally brushed and those opposite the ejectors to be ejected from the carrier on the shutters 77 at the other side of the machine, and subsequently by such connections 15 16 70 63 65 64 66 67 44 38 31 30 59^x 57 causes such series of brushes 27, shields 29, and ejectors 28 to be retired clear of the carrier to permit of the next step-like movement of the latter. It also between each retirement and advance of the said brushes, shields, and ejectors causes by the connections 15 16 17 18 85 86^x 83 87 89 90 91 92 94 93 78 95 96 80 the shutters 77 79 to be opened, so as to lower the bottles ejected from the carrier between the externally-brushing brushes 75 onto the vertically-reciprocating casting 107 of the rinsing mechanism, and to be again shut, ready to receive the next series of bottles ejected from the carrier. It also between each shutting and opening of the shutters 77 79 causes by the connections 15 16 116 117 127 114 113 112 111 109 125 126 the casting 107, supporting the bottles lowered there-

unto, as aforesaid, to be lowered about the rinsing-pipes 76 and to be raised again between the brushes 75 at the back side of the shutters 79, and the tap 124 to be in the mean-
 5 time turned on and off.

122 represents lubricating-caps fitted to the parts desired to be kept lubricated.

I claim as my invention—

1. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, having through-apertures 6, in which the bottles are soaked and internally brushed, continuously-rotating and intermittently advancing and retiring brushes 27, arranged at one side of the carrier, by which the
 15 bottles are internally brushed while supported by the carrier and while the latter is at rest, simultaneously advancing and retiring ejectors 28, arranged at the same side of the carrier, by which the soaked and internally-brushed bottles are ejected from the carrier, intermittently-acting slats 77 and
 20 shutters 79, arranged at the other side of the carrier, by which the bottles ejected from the carrier are received and guided, mouths downward, to means for externally brushing them and internally rinsing them and are subsequently passed onto a delivery-table arranged at the same side of the carrier, continuously-rotating stationary brushes 75, by which the
 30 bottles are externally brushed both previously and subsequently to their being internally rinsed, intermittently-acting stationary rinsing-pipes 76, and intermittently-acting retiring and advancing carriers 107, by which the bottles to be rinsed are received from between the brushes 75, lowered onto the rinsing-pipes 76, and subsequently returned between such brushes 75 into position to be
 40 passed onto the delivery-table, as set forth.

2. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, provided with apertures 6, in which the bottles are soaked and internally brushed, continuously-rotating and intermittently advancing and retiring brushes 27, arranged at one side of the carrier, by which the bottles are internally brushed while supported by the carrier and while the latter is at rest, and
 50 simultaneously advancing and retiring ejectors 28, arranged at the same side of the carrier, by which series of previously-soaked and internally-brushed bottles are ejected from the carrier, as set forth.

3. In machinery for washing bottles, in combination, a brush 27, socket 37, square rod 48, sleeve 49, and continuously-rotating pulley 50, a fixed supporting-bearing 33, and an endwise-reciprocating supporting-bearing 53, a sleeve 38, and contained spring 39, operating on the socket 37, and connected weight 40, intermittently advancing the brush, a simultaneously advancing and retiring guided brush-shield 29, advanced by a connected weight 45, the said brushes, shields, ejectors, and connected means being all in series of any re-
 65

quired number, and levers 63 and 64, by which the series of brushes 27, shields 29, and ejectors 28 are simultaneously retired with a positive movement, as set forth.

4. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, provided with apertures 6, in which the bottles are soaked and internally brushed, intermittently advancing and retiring ejectors 28, arranged at one side of the carrier and by which the soaked and internally-brushed bottles are ejected therefrom, and intermittently-acting slats 77 and shutters 79, arranged at the other side of the carrier and by which the bottles ejected from the carrier are received and guided, mouths downward, between externally-operating brushes 75 and onto internally-rinsing pipes 76 and subsequently passed onto a delivery-table 82, all arranged at the same side of the carrier, as set forth.

5. In machinery for washing bottles, in combination, an intermittently-rotating bottle-carrier 5, provided with apertures 6, in which the bottles are soaked and internally brushed, intermittently-acting slats 77 and shutters 79, arranged at one side of the carrier and by which the bottles ejected from the carrier after having been soaked and internally brushed while supported thereby are received and guided, mouths downward, between externally-operating brushes 75 and onto internally-rinsing pipes 76 and are subsequently passed onto a delivery-table 82, all arranged at the same side of the carrier, continuously-rotating stationary brushes 75, by which the bottles are externally brushed both previously and subsequently to their being internally rinsed, intermittently-acting stationary rinsing-pipes 76, and intermittently-acting retiring and advancing carriers 107, by which the bottles to be rinsed are received from between the brushes 75, lowered onto the rinsing-pipes 76, and subsequently returned between such brushes 75 into position to be passed onto the delivery-table, as set forth.

6. In machinery for washing bottles, in combination, intermittently-acting slats 77 and shutters 79, by which the bottles after being soaked and internally brushed are received and guided, mouths downward, between externally-operating brushes 75 and internally-rinsing-pipes 76 and are subsequently passed onto a delivery-table 82, continuously-rotating brushes 75, by which the bottles are externally brushed both previously and subsequently to their being internally rinsed, intermittently-acting stationary rinsing-pipes 76, and intermittently-acting retiring and advancing carriers 107, by which the bottles to be rinsed are received from between the brushes 75, lowered onto the rinsing-pipes 76, and subsequently returned between such brushes 75 into position to be passed onto the delivery-table, as set forth.

7. In machinery for washing bottles, in com-

5 bination, a channeled frame 72, an intermittently-operating slat 77, connected levers 94, 91, 89, and 83, and operating-cam 86^x, and an intermittently-operating shutter 79, connected to and operated by such connected series of levers, such slats and shutters being in series of any required number, as set forth.

10 8. In machinery for washing bottles, in combination, a stationary force-pipe 104, series of rinsing-pipes 76, intermittently-operating cock 124, and connected levers 126, 125, 113, and 127, and rod 117, operating crank-pin

116, and an intermittently-operating carrier 107, cups 118, and supporting-rods 112, connected to and operated by such connected series of levers, as set forth. 15

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

GEORGE BURGESS, JR.

Witnesses:

S. ERNEST BRANSON,
FRANK M. CLARK.